Government College Karsog

District Mandi, Himachal Pradesh

Cycle 3 of NAAC Accreditation

Criterion: 3: Research, Innovations and Extension

Key Indicator: 3.3: Research Publications and Awards

Metric: 3.3.2: Books and chapters in edited volumes/books published and papers in national/ international conference proceedings

Indian Writing in English

A Critical Perception

Editor :
P. Ananthan

Co-Editors :
Mukesh Pundalik Patil
Rohit Kant Mishra

23. Scribbles of Soul: A Journey of Railway Raju to Reluctant Renunciation in R.K. Narayan's *The Guide*

Kulbhushan Sharma,
Assistant Professor of English
Government College Karsog,
District Mandi, HP

R. K. Narayan's *The Guide* is considered to be a representative novel depicting incompatibility of interests of human beings ironically brought together by fate. It is a realistic rendering of the Indian society at the time when India had attained independence and was coming of an age. Its main protagonist, Raju, can be seen as the progression of a guidestarting from guiding the tourists to being Rosie's guru and, ultimately, transforming into a spiritual guide. The metamorphosis of Raju from a railway Raju to reluctant renunciate is a saga of struggle of selfaffirmation and selfactualization. Raju attains social joviality by guiding the tourists and makes it as his occupation for his earning. He exhibits discernible vital traits of an effective guide, ranging from being eloquent and intelligent. Raju carries an amiable demeanor to leave a mark on anyone he comes across with his expressive speeches and the tourists always look and throng beside him. He has the adaptability quotient to mould to the new and can gel well on in any situation. He is a remarkable journey of transformation from being a vacillating guide to a

Mass and Radius of rotating Protoneutron Star with in extended relativistic mean field model and their correlation with frequency

Gulshan Mahajan[1],* Anuj Sharma[2], and Shashi K. Dhiman[3]
[1]Department of Physics, Government College Nurpur, Dist. Kangra, Himachal Pradesh-176201, INDIA
[2]Department of Physics,Baddegi Kanya Mahavidyalaya Barsar, 176314 and
[3]Department of Physics,Himachal Pradesh

Introduction

Protoneutron star is a result of the gravitational collapse of a massive stellar core. Initially it can have large radius of about 100 km and a temperature of 30-100 MeV. The Protoneutron star may be born with a large rotational kinetic energy and initially it will be differentially rotating. Due to the violent nature of the gravitational collapse, the PNS palsates heavily, emitting significant amounts of gravitational radiation. After a few hundred gravitational periods, bulk viscosity will damp the palsations significantly. Rapid cooling due to deleptonization transforms the PNS, shortly after its formation, into a hot compact star of $T \sim 10$ MeV [1]. This work is in continuation to previous work [2]. We verified the evolution of cold compact stars to the Protoneutron star at various temperature. In the present work we have employed BSR15 parameterization of the Extended Relativistic Mean Field Model [3, 4], generated by choosing the ω meson self-coupling ζ as 0.06 and neutron skin thickness Δr for the ^{208}Pb nucleus as 0.16. Further, the hyperon-meson coupling parameters are expressed in terms of the nucleon-meson coupling using the SU(6) model [5]. This parameterization is selected for this study as this parameterization produce a canonical mass ($1.4M_{\odot}$) at rest when composition is assumed to possess hyperon.

*Electronic address: gs1.mahajan@gmail.com

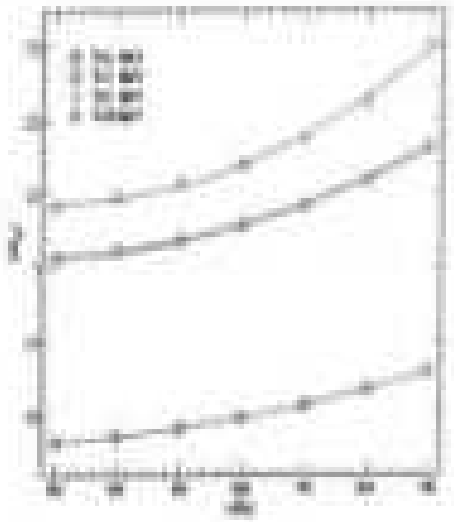


FIG. 1: The variation of compact star mass with frequency is plotted as black square, red circles, green triangles and blue diamonds at a temperature of 0.0,5 and 10 MeV. The best fit line for each case is plotted as solid line of respective colour.

Result & Discussion

In Fig.1 we plotted mass as a function of frequency for BSR15 parameterization at different temperatures. The black squares are the values of cold star mass at different frequencies, whereas red circles, green triangles and blue diamonds are the star masses at a temperature of 0.5 and 10 MeV. The solid line represent the best fit line. BSR15 parameterization yield a rest mass of $1.78\ M_{\odot}$ and a radius of 11.39 Km whereas mass increases $1.80M_{\odot}$, $1.9\ M_{\odot}$ and $2.07\ M_{\odot}$ and radius of 12.69 Km, 12.74 Km and 13.65 Km at a temperature of 0 MeV, 5 MeV and 10 MeV re-

A Study of Charge Radii in Si, S, Ar and Ca Nuclides within Relativistic Hartree-Fock-Bogoliubov Approximation

Smriti Thakur,* Virender Thakur,† and Shashi K Dhiman‡
Department of Physics, Himachal Pradesh University, Summer-Hill, Shimla-171005, INDIA

Introduction

The nuclear charge radius is one of the most salient nuclear parameters that gives information about the nuclear shell model and the impact of effective interactions on nuclear structure [1]. It can be measured experimentally by methods based on the electromagnetic interaction between the nucleus and electrons or muons. One of the recent methods to determine the nuclear radius is from fusion cross section measurements at low energy [2]. The change in charge radii and other nuclear ground state and excited state parameters as a function of neutron or proton number indicate the nuclear structure effects such as, shell closures and changes in deformation [3]. We present our theoretical results for nuclear charge radius R_c as a function of neutron number N in even-even isotopes of Si, S, Ar and Ca nuclei by employing meson coupling model with DDME2 parameterizations and point coupling model with DDPC1 parameterizations with a separable pairing interaction. The theoretical computed results are reasonably reproducing the available experimental data.

Theoretical Framework

We employed Covariant Relativistic self-consistent mean field models analogous to Kohn-Sham density functional theory to construct the Nuclear Density Functionals from Lagrangian densities based on mesons exchange and point coupling models. The pairing correlations of nucleons are considered by the relativistic Hartree-Bogoliubov functional based on quasi-particle operators of Bogoliubov transformations. The nuclear energy density functionals are constructed by using meson coupling model with DDME2 parameterizations [4] and point coupling model with DDPC1 parameterizations [5] with a separable pairing interaction [6].

Results and Discussions

We present the comparison of our theoretical results with available experimental data for charge radii R_c and our results are in reasonable good agreement with experimental data [1, 8]. In Figs.(1 and 2), we present theoretical results for the charge radii R_c in fm as a function of neutron number N for the even-even nuclides of Silicon, Sulphur, Argon and Calcium. The theoretical charge radius of a nucleus can be obtained by using a relationship as [7],

$$R_c = \sqrt{R_p^2 + < r_p^2 > + \frac{N}{Z} < r_n^2 >} (fm), \quad (1)$$

where, $< r_p^2 >= 0.8750$ fm denotes the mean-square charge radius of a proton and $< r_n^2 >= -0.1161$ fm is the mean-square charge radius of neutron [7]. In Fig.(1), we observed that the value of R_c is decreasing in ^{22}Si nucleus from 3.32 fm to 3.06 fm in ^{28}Si, thereafter the magnitude of R_c is increasing in chain of isotopes of Si to maximum $R_c = 3.28$ fm in ^{44}Si. Likewise, in case of Sulphur the theoretical value of R_c in ^{26}S is decreasing from 3.37 fm to 3.23 fm in ^{30}S, thereafter, it is increasing to the maximum $R_c = 3.39$ fm in ^{46}S. It is found that the minimum value of R_c at N/Z = 14, indicates $\nu(\pi)d_{5/2}$ orbit of Shell Model spin-orbit

*Electronic address: thakursmriti14@gmail.com
†Electronic address: virenthakur123@gmail.com
‡Electronic address: shashi.dhiman@gmail.com

RMF model based Investigation of Two Neutron Separation Energies for Middle Weight Nuclides near Drip Lines

Smriti Thakur,* Virender Thakur,† and Shashi K Dhiman‡
Department of Physics, Himachal Pradesh University, Summer-Hill, Shimla-171005, INDIA

Introduction

The production of more and more new isotopes has revived the interest in nuclear structure models in recent years. Understanding the structure of the atomic nucleus is one of the central challenges in nuclear physics. The study of nuclei lying far from the line of β-stability play an important role in our understanding of nuclear physics. Far away from stability line, the limits of nuclear existence are reached, where one or more nucleons are no longer bound. Near nuclear driplines, the physics is very interesting and has fascinated the researchers to work on it. The purpose of present work to investigate theoretically the two neutron separation energy (S_{2n}) which reflects the magicity of Shell Structure in the isotopic chains of Germanium, Selenium, Strontium and Krypton. Our results are complimented by the close agreement with the recent available experimental data [4].

Theoretical Framework

We have employed relativistic self-consistent mean field models to construct the Nuclear Density Functionals from Lagrangian densities based on mesons exchange and point coupling models. The pairing correlations of nucleons are considered by the relativistic Hartree-Bogoliubov functional based on quasi-particle operators of Bogoliubov transformations. The nuclear energy density functionals are constructed by using meson coupling model with DD-ME2 parameterizations [1] and point coupling model with DD-PC1 parameterizations [2] with a separable pairing interaction parameter, G = 728 MeVfm^3 and pairing width, a = 0.644 fm in the p-p channel. The Lagrangian density for mesons exchange approximation is given as [1],

$$\begin{aligned}\mathcal{L} &= \sum_i \overline{\psi_i}(i\gamma_\mu\partial^\mu - m)\psi_i + \frac{1}{2}\partial_\mu\sigma\partial^\mu\sigma - \frac{1}{2}m_\sigma^2\sigma^2 \\ &\quad -\frac{1}{2}\Omega_{\mu\nu}\Omega^{\mu\nu} + \frac{1}{2}m_\omega^2\omega_\mu\omega^\mu - \frac{1}{4}\vec{R}_{\mu\nu}\vec{R}^{\mu\nu} + \frac{1}{2}m_\rho^2\vec{\rho}_\mu.\vec{\rho}^\mu \\ &\quad -\frac{1}{4}F_{\mu\nu}F^{\mu\nu} - g_\sigma\overline{\psi}\psi\sigma - g_\omega\overline{\psi}\gamma^\mu\psi\omega_\mu - g_\rho\overline{\psi}\vec{\tau}\gamma^\mu\psi.\vec{\rho}_\mu \\ &\quad -e\overline{\psi}\gamma^\mu\psi A_\mu. \qquad (1)\end{aligned}$$

And the total Lagrangian density for point-coupling models is [2],

$$\begin{aligned}\mathcal{L} &= \overline{\psi}(i\gamma.\partial - m)\psi - \frac{1}{2}\alpha_S(\rho)(\overline{\psi}\psi)(\overline{\psi}\psi) \\ &\quad -\frac{1}{2}\alpha_V(\rho)(\overline{\psi}\gamma^\mu\psi)(\overline{\psi}\gamma_\mu\psi) - \frac{1}{2}\alpha_{TV}(\rho)(\overline{\psi}\vec{\tau}\gamma^\mu\psi)(\overline{\psi}\vec{\tau}\gamma_\mu\psi) \\ &\quad -\frac{1}{2}\delta_S(\partial_\nu\overline{\psi}\psi)(\partial^\nu\overline{\psi}\psi) - e\overline{\psi}\gamma.A\frac{1-\tau_3}{2}\psi. \qquad (2)\end{aligned}$$

The Hamiltonian densities can be calculated from Eqs.(1,2) and hence the nuclear energy density functional for DD-ME2, DD-PC1 respectively.

Results and Discussions

The two neutron separation energy is defined as the energy required to remove two neutrons from a nucleus. The two neutron separation energy is calculated using the formula,

$$S_{2n}(Z,N) = [B(Z,N) - B(Z,N-2)], \quad (3)$$

where S_{2n}(Z,N) defines the two neutron separation energy for the nuclei with atomic number Z and neutron number N. We have theoretically calculated S_{2n}(Z,N) results for even-even isotopes of Ge, Se, Kr and Sr with the

*Electronic address: thakursmriti14@gmail.com
†Electronic address: virenthakur123@gmail.com
‡Electronic address: shashi.dhiman@gmail.com

Rotating Hadron Stars Under Strong Magnetic fields

Suman Thakur,* Virender Thakur, and Shashi K. Dhiman†
Department of Physics, Himachal Pradesh University Shimla-171005, INDIA

Introduction

Nevertheless, all pulsars have relatively strong magnetic fields and due to this reason, a complete analysis of pulsar should include magnetic field effects. Compact stars gives us the opportunity to study the strongly interacting dense nuclear matter under the extreme condition in their interior. Theoretically, it is discussed that the composition of compact stars is ranging from the mixture of hadrons, leptons to various phases of superconducting quark matter under beta equilibrium. Since rotation is a general property of all stellar bodies. Many recent observations of gravitational maximum masses and extraction radius of the pulsars have imposed restriction on their composition, to as a plausible set of equations of state (EOS) must support the limits of observed maximum gravitational masses of compact stars. In the present work, we study the effect of strong magentic fields on the structure properties of rotating neutron star. We have constructed a set of equations of state with composition of neutron, proton, hyperons and lepton in beta equilibrium under the strong magnetic field varying upto eB = $1.2\times10^{-2}GeV^2$. To study the influence of magnetic field in the steller interior, we consider altogether two decay modes of a density-dependent magnetic field, a fast decay(γ=3.00, β=0.02), a slow decay(γ=2.00, β=0.05).

Theoretical Framework

The total energy density and total pressure of dense nuclear matter in the framework of Field Theoretial Based Relativisitic Mean Field (FTRMF) can be written as,

$$\mathcal{E}^H = \mathcal{E}_m + \mathcal{E}_l + \frac{[B(\frac{\rho}{\rho_0})]^2}{2}, \qquad (1)$$

$$P^H = P_m + P_l + \frac{[B(\frac{\rho}{\rho_0})]^2}{2}, \qquad (2)$$

where $\mathcal{E}_m$ and $\mathcal{E}_l$ corresponds to energy densities of baryons and leptons, respectively. The P_m and P_l, corresponds to pressures of baryons and leptons, respectively. The B(ρ/ρ_0) is representing density-dependent magnetic field [1].

The matter inside the star is approximated by a perfect fluid and the energy-momentum tensor is given by

$$T^{\mu\nu} = (\mathcal{E} + P)u^\mu u^\nu - Pg^{\mu\nu} \qquad (3)$$

where $\mathcal{E}$, P and u^μ are the energy density, pressure, and four-velocity, respectively. In order to solve Einstein's field equation for the potentials γ, ρ, β and ω, we adopt the KEH method [3] and use the public RNS code [4] for calculating the properties of a roating star.

Results and Discussions

In present theoretical calculatiom, we have employed BSR10 parametrisation [2] for computing the energy density and pressure of EOSs in fast and slow decay modes.

The Interaction strength couplings of hyperons with the meson fields and hyperons with strange meson field are employed as suggested in [2]. For charged particles, the effect of Landau quantization appears as $\sqrt{m_b^{*2} + 2\nu eB}$ in the energy spectra from field equation. Here, ν, representing the Landau level, varying in integer as, $\nu = 0, 1, 2, ., ., ., ..$ In Figure(1), we present the variation of energy density $\mathcal{E}^H$ and pressure P^H in units of MeVfm^{-3} with increasing magnetic fields

*Electronic address: sumanthakur88@gmail.com
†Electronic address: shashi.dhiman@gmail.com

Structural Properties of Rotating Hybrid Stars with Color - Superconducting Quarks Matter

Suman Thakur,* Virender Thakur, and Shashi K Dhiman
Department of Physics, Himachal Pradesh University, Shimla - 171005, INDIA

Introduction

The recently extracted limits of gravitational maximum mass of compact star and their radii and detection of gravitation waves GW170817 [1] from rotating stars are the motivating astrophysical observables to investigate a set of plausible equation of states (EOSs) of dense nuclear matter. These investigations can guide us to unfold the particle composition of nuclear dense matter and constrain the EOS from crust to the inner core of compact star. The nuclear equation of state is computed within the framework of energy density functionals based on the relativistic mean field theory by employing BSR1 [6] and IOPB-I [5] models. The color superconducting quarks matter phase of equation of state is based upon a Quarks Quasiparticle model(QQPM) derived from a non-relativistic energy density-functional approach. The medium effects are included in the cold quarks matter in terms of variation in effective mass of quarks and effective bag parameters as function of chemical potential with the bag constant as, $(B_0)^{1/4} = 135$MeV, 155MeV. A plausible set of hybrid equations of state for superdense hadron-quarks matter is used to the construct hybrid stars, which reasonably satisfy constraints provided the data of compact stars of astrophysical interest. We construct the mixed phase of EOS made up of the hadron matter and quark matter by employing the Glendenning construction [2] for hybrid compact star. In order to study the properties of a rapidly rotating Hybrid Neutron Star, we should first construct the Equation of State of the star.

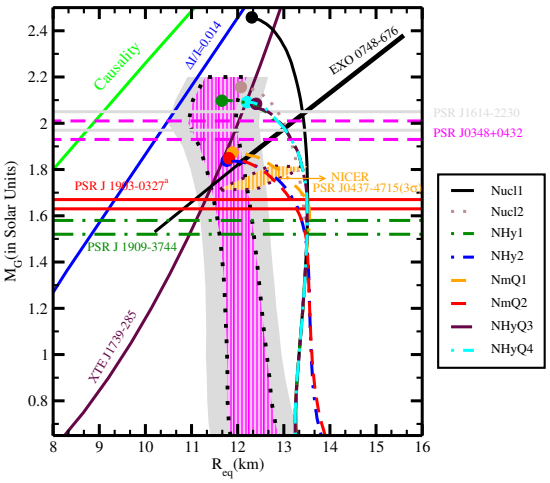


FIG. 1: Relationship between gravitational mass and radius of non - rotating compact star for various EOSs. The region excluded by causality light green solid line and rotation constraints of neutron star XTE J1739-285 solid maroon line are given. The mass and radius limit estimated from Vela pulsar glitches $\Delta I/I$=0.014 is shown as blue solid line. The mass limits of pulsars PSR J1614-2230 and PSR J0348+0432 are plotted for comparison. The limits on compact star mass and radius from Ozel's analysis of EXO 0748-676 with 1σ (dark solid black line) and 2σ (extended black line) error bars are also shown. The mass radius relationship obtained in Ref.[7] from extracted data of EOS by using QMC+Model A. The orange region bounded by the dotted maroon lines is representing the mass - radius relationship extracted for the proposed pulsar PSRJ0437-4715 for 3σ confidence level in the NICER program [8].

Relativistic Rotation of Stars

The matter inside the star is approximated by a perfect fluid and the energy-momentum tensor is given by

$$T^{\mu\nu} = (\mathcal{E} + P)u^{\mu}u^{\nu} - Pg^{\mu\nu} \qquad (1)$$

*Electronic address: sumanthakur88@gmail.com

An Investigation of Binding Energy for Even-Even Exotic Isotopes within Skyrme-Hartree-Fock-Bogoliubov Formalism

Virender Thakur,* Suman Thakur,† Smriti Thakur,‡ and Shashi K Dhiman§
Department of Physics, Himachal Pradesh University, Summer-Hill, Shimla-171005, INDIA

Introduction

The properties of exotic nuclei on the edge of existence play a fundamental role in our understanding of various nuclear properties and interactions. The physics of exotic nuclei is one of the fastest developing subjects in nuclear physics. The exotic nuclei have shorter life times and are characterized, in most cases by unbalanced ratio between the proton number(Z) and neutron number(N). The ground state binding energy, and thus the mass of nucleus, is one of the characteristic properties, revealing deep insight into the nuclear structure which has applications in medicine, energy generation, nuclear waste transmutation and nuclear astrophysics [3]. We present our theoretical results of ground state binding energies(B.E.) of even-even nuclides of $^{22-44}$Si, $^{26-48}$S, $^{30-52}$Ar and $^{36-58}$Ca isotopes. The theoretically computed results with UNEDF0 parameterization of functional are reasonably reproducing the latest experimental observations [4].

Method

We employed self-consistent mean field models analogous to Kohn-Sham density functional theory to construct the Skyrme Energy Density Functionals [1, 2] from Hartree-Fock-Bogoliubov Hamiltonian based on single-particle wave functions of the transformed harmonic oscillator with zero-range pairing interactions. For the proton states, we have added to the central potential, the direct Coulomb field

$$V_d^C(\mathbf{r}) = e^2 \int d^3\mathbf{r}' \frac{\rho_p(\mathbf{r}')}{|\mathbf{r}-\mathbf{r}'|} \qquad (1)$$

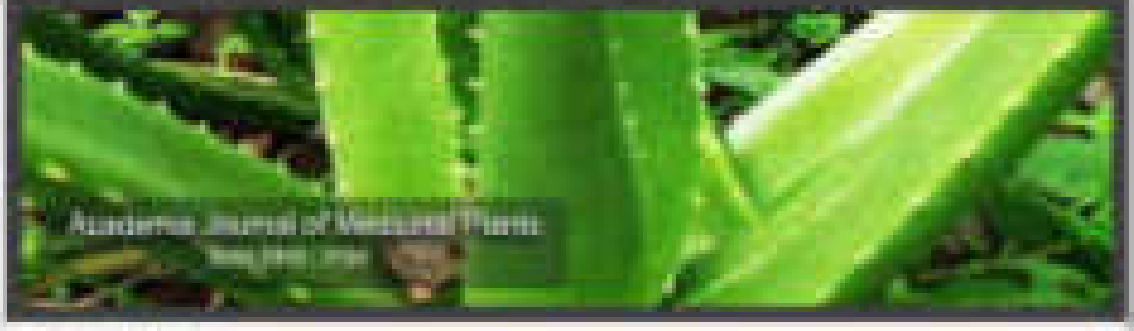
as well as the exchange Coulomb field, which in the present implementation is treated within the Slater approximation given below in equation:

$$V_{ex}^C(\mathbf{r}) = -e^2 \left(\frac{3}{\pi}\right)^{1/3} {\rho_p}^{1/3}(\mathbf{r}) \qquad (2)$$

Result and Discussion

Binding energy is the energy required to disassemble a whole system into separate parts. A bound system typically has a lower potential energy than the sum of its constituent parts and this is what keeps the system together. Often this means that energy is released upon the creation of a bound state. This definition corresponds to a positive binding energy. In general, binding energy represents the mechanical work that must be done against the forces which hold an object together. In the FIG.1, we have presented the results of fractional relative error (ΔE_f) in binding energy per nucleon for the even-even exotic isotopes of Silicon (green4 left triangles), Sulphur (blue right triangles), Argon (maroon circles) and Calcium (red squares). Fractional Relative error is computed by the relation $\Delta E_f = [(BE/A)_{exp} - (BE/A)_{theo}]/(BE/A)_{exp}$. A represents the total number of nucleons. Theoretical data is in good agreement with the experimental data [4] as we can see clearly in FIG. 1. For Silicon isotopes, The fractional relative error ranges from 0.01 (for ^{18}Si) to 0.08 (for ^{34}Si). For Sulphur isotopes, it ranges from 0.012 (for ^{32}S) to 0.05 (for ^{26}S). For Sulphur isotopes, ΔE_f

*Electronic address: virenthakur123@gmail.com
†Electronic address: sumanthakur88@gmail.com
‡Electronic address: thakursmriti14@gmail.com
§Electronic address: shashi.dhiman@gmail.com



Research Article

Academia Journal of Medicinal Plants 6(10): 330-336, October 2018
DOI: 10.15413/ajmp.2018.0160
ISSN: 2315-7720
©2018 Academia Publishing

Abstract

Plant growth promoting traits of a novel psychrotrophic bacterium Viridibacillus arenosi PH15 isolated from rhizosphere of Podophyllum hexandrum Royle

Accepted 04th September, 2018

Neha Gautam[1]*, Pankaj Sharma[2,3], Jai Chand Rana[4] and Mohar Singh[3]

[1]Department of Microbiology, Dr. Bhakta Darshan Memorial College, Kangra, Himachal Pradesh, 176001 India.
[2]Plant Centre on Climate Change, Himachal Pradesh Council for Science, Technology and Environment, Vigyan Bhawan, Bamloh, Shimla, Himachal Pradesh 171001 India.
[3]ICAR-National Bureau of Plant Genetic Resources, Regional Station, Phagli, Shimla, Himachal Pradesh, 171004 India.
[4]ICAR-National Bureau of Plant Genetic Resources, Division of Germplasm Evaluation, Pusa Campus, New Delhi, 110012.

In the present study bacterial isolate PH15 was isolated from rhizosphere of Podophyllum hexandrum Royle growing in Dangla valley of Himachal Pradesh, India at an altitude of 3053 m to 4000 m a.s.l. Psychrotrophic isolate PH15 was identified as Viridibacillus arenosi by 16S rRNA gene technique and is registered under the accession number MG742537 in NCBI Genbank database. Phylogenetic tree for the organism was inferred by using Neighbour joining method (NJ). The present study characterizes the V. arenosi PH15 as a potential plant growth promoting rhizobacteria as it showed strong antagonism against various plant pathogens namely Alternaria solani (87%), Botrytis cinerea (62.5%) and Fusarium oxysporum (87.5%) in addition to its capability of producing siderophore, HCN, ammonia, protease and phosphatase etc. The study also revealed that since the strain PH15 is isolated from a colder environment of the alpine Himalaya, it has the potential to adapt to the stressful cold conditions and can thus be explored as a potential PGPR in cold agro-ecosystems where microbial inoculants are known to result fast

Key words: Biolog Microbial, neighbour joining method, Podophyllum hexandrum, PGPR, psychrotroph.

Cite this article as:
Gautam N, Sharma P, Rana JC, Singh M (2018). Plant growth promoting traits of a novel psychrotrophic bacterium Viridibacillus arenosi PH15 isolated from rhizosphere of Podophyllum hexandrum Royle. Acad J Med Plants 6(10): 330-336.

संगीत वाटिका

ऋषभ भारद्वाज

संगीत जगत की कुछ प्रसिद्ध हस्तियों के कथन

"आवाज़ की कलम से, हवा की स्क्रीन में, दिल के जज़्बात लिखने का नाम है संगीत।"

– उ० गुलाम मुस्तफ़ा खां

"Tanpura is our mother and without our mother, we are not comfortable at all."

– Pt. Ajoy Chakraborty

"हिन्दुस्तानी संगीत में 360 तालें हैं, जिनमें सबसे कम 04 मात्रा की और सबसे अधिक 108 मात्रा की ताल होती है।"

– उ० ज़ाकिर हुसैन

"रागों का गायन समय सूर्य की गति पर निर्भर करता है।"

– पं० राजन और साजन मिश्र

"सात स्वरों से 5,040 तानें बनती हैं, जिनमें से 168 ही काम की होती हैं।"

– उ० आमिर खां

"बंदिश का उच्चारण एकदम स्पष्ट होना चाहिए।"

– पं० अजय पोहंकर

"Folk music of our country is the most original music of our country."

– उ० अमजद अली खां

"व्यवहार (Practical prevalence) ही शास्त्र (Book/Treatise) का सृजन करता है।"

-पं० रामाश्रय झा

Rishabh Bhardwaj

musicinjungle@gmail.com

Evincepub Publishing

ISBN 978-93-90586-23-3

Evincepub Publishing

Parijat Extension, Bilaspur, Chhattisgarh 495001
First Published By Evincepub Publishing 2021

ISBN: 978-93-90586-23-3
MRP: Rs.210/-

संगीत वाटिका

संगीत की सभी बुनियादी बातें

THEORY OF HINDUSTANI MUSIC

ऋषभ भारद्वाज

भारतीय शास्त्रीय संगीत का शास्त्र पक्ष

आत्म परिचय – Bio Data

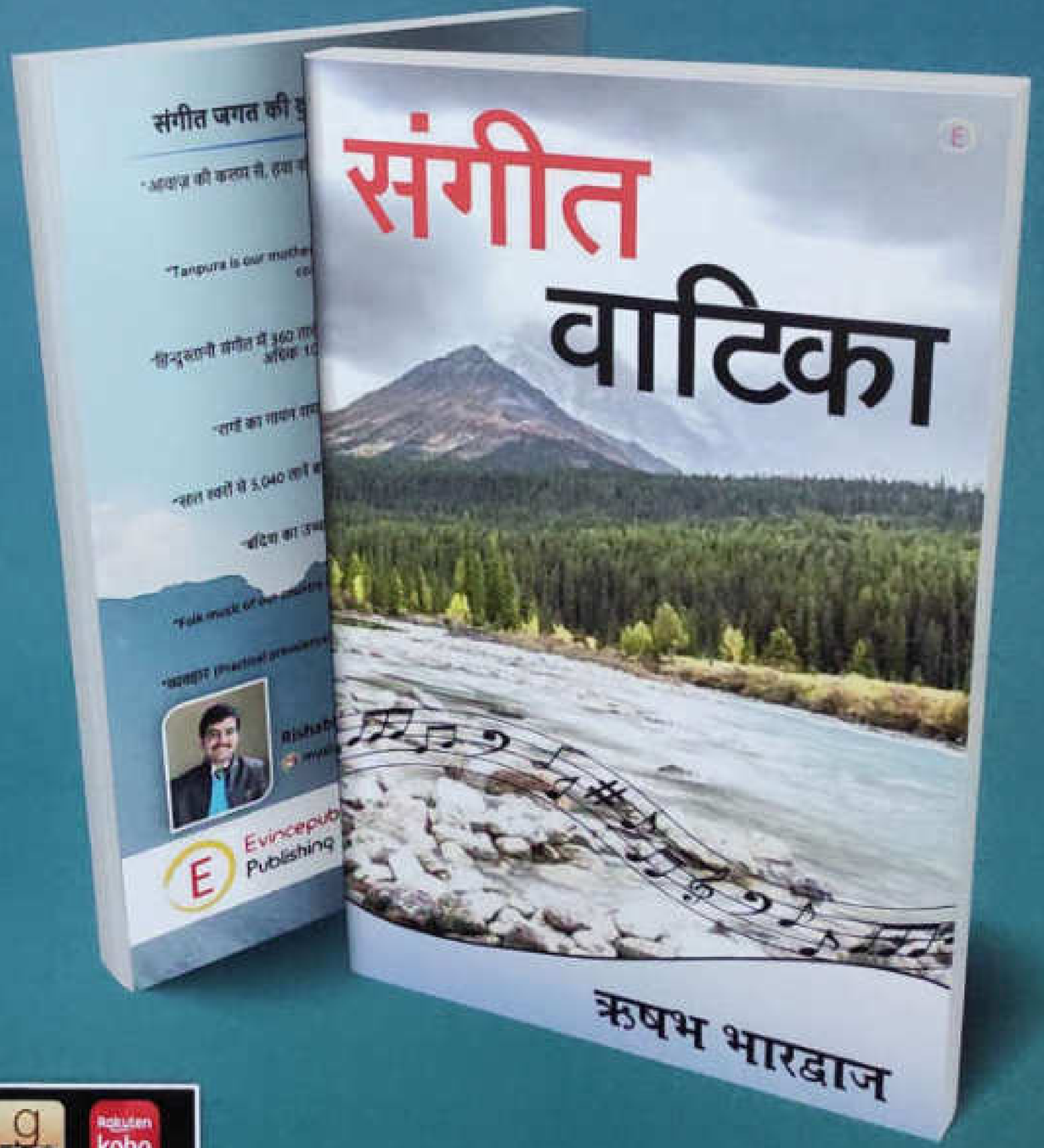
1	**नाम** ➢ ऋषभ भारद्वाज
2	**जन्म** ➢ 11 जनवरी 1986, धर्मशाला , ज़िला – कांगड़ा (हि०प्र०) भारत
3	**मूल निवासी** ➢ पुराना बाज़ार करसोग, तहसील / डाकघर करसोग, ज़िला-मंडी (हि०प्र०) 175011
4	**शिक्षा** ➢ M.A. & M. Phil – Music (Vocal), Ph.D pursuing, UGC – JRF, संगीत प्रभाकर (गायन)
5	**विशेष** ➢ वर्ष 2011 से वर्ष 2019 तक (08 वर्ष 2 माह तक) मानव संसाधन मंत्रालय, भारत सरकार के अंतर्गत केन्द्रीय विद्यालय संगठन में संगीत शिक्षक के रूप में नियमित कर्मचारी के रूप में शिक्षण कार्य। ➢ अप्रैल 2019 से जून 2020 तक (1 साल 2 महीने) राजकीय महाविद्यालय सरकाघाट में शिक्षण कार्य।
6	**प्रकाशन** ➢ राष्ट्रीय और अंतर्राष्ट्रीय पत्रिकाओं में शोध पत्र के प्रकाशन ➢ ग़ज़लों पर आधारित किताब (तन्हा काफ़िला) का सफल प्रकाशन। ➢ राग वाटिका, भाग- 01 और भाग -02 का सफल प्रकाशन।
7	**वर्तमान** ➢ Assistant Professor, Department of Music (Vocal) Govt. College Karsog, District Mandi (H.P.) ➢ संपर्क – E-mail - musicinjungle@gmail.com

Evincepub Publishing

www.evincepub.com

RELEASED WORLDWIDE

संगीत वाटिका



लेखक
ऋषभ भारद्वाज

ORDER NOW

evincepub.com amazon Flipkart kindle Rakuten kobo

A PUBLISHED AUTHOR

This is awarded to

RISHABH BHARDWAJ

BOOK: SANGEET VATIKA
ISBN: 9789390586233

In appreciation of your excellent literary work resulting in a great achievement as a self-published author. We appreciate your work and dedication towards literature.

Given 09 Day OF Jan, 2021

Authorised Signatory
Evincepub Publishing

From all of us at.

EVINCEPUB PUBLISHING
www.evincepub.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VII July 2022- Available at www.ijraset.com

Comparative Analysis of Efficacious Metaheuristic Technique with Genetically Modified- Flower Pollination Algorithm (GM-FPA) for Test Case Prioritization in Regression Testing

Priyanka Dhareula[1], Anita Ganpati[2]

Abstract: ***Regression Testing is most imperative activity of software development life cycle. Test case prioritization being one of the most adopted branch for regression testing and with the invent of nature inspired metaheuristic techniques in optimization, this study makes an attempt to augments the features of test case prioritization with nature inspired metaheuristic techniques to determine the most efficacious metaheuristic techniques from Cuckoo Searh (CS) algorithm, Genetic Algorithm (GA) and Flower Pollination Algorithm (FPA) for three different case studies. APFD metrics is used to compare the algorithms. Further the study compares the most efficacious technique with Genetically Modified- Flower Pollination Algorithm (GM-FPA) to identify the most efficient technique for regression test case prioritization.***

Keywords: Regression Testing, Test Case Prioritization, Cuckoo Search Algorithm, Genetic Algorithm, Flower Pollination Algorithm, APFD.

I. INTRODUCTION

The present study compared metaheuristic techniques for test case prioritization [4] in regression testing [1, 15]. Efficacy of an algorithm is determined by the maximum number of faults it can identify for a given version of a case study. The most efficacious metaheuristic technique for test case prioritization has been identified by comparing Cuckoo Search (CS) algorithm[13,14], Genetic Algorithm (GA) [3,10], and Flower Pollination Algorithm (FPA) [2, 12] for test case prioritization by using the Average Percentage of Faults Detected (APFD) metrics.

Further, the efficiency of the proposed Genetically Modified-Flower Pollination Algorithm (GM-FPA) [11] is measured in terms of APFD value by comparing it with the most efficacious metaheuristic technique identified in this study.

Also, GM-FPA is compared with random order, and reverse random order of test case execution for test case prioritization in regression testing.

This study uses three case studies to perform the comparative analysis of the metaheuristic techniques. The research culminates with the detailed discussion of the results produced during the course of this study.

II. RESEARCH METHODOLORY

Empirical study was performed to analyze the most efficacious metaheuristic technique for test case prioritization. To determine the efficiency of the proposed technique, it was compared with the previously identified most efficacious metaheuristic technique, and two non-metaheuristic techniques namely: random order and reverse random order of test case execution for test case prioritization. All the techniques were implemented in java.

For the empirical evaluation three case studies namely: Puzzle Game Application (PGA), Triangle Classification Problem (TCP), and AreaandPerimeter Application (APA) designed in java were used. The case studies were picked from different online code repositories. Various open source software namely: Eclipse IDE, EclEmma code coverage tool, TestNG tool, MySql were considered to code the algorithms, to maintain the database, to analyze the code coverage, fault coverage, and time of execution of the test cases respectively.

Three metrics were used for the empirical evaluation of this study namely: Average Percentage of Statement Coverage (APSC), Average Percentage of Fault Coverage (APFD), and time of execution.

Protoneutron Star rotating with keplerian frequency with in relativistic mean field model

Gulshan Mahajan[1],* Anuj Sharma[2], and Shashi K. Dhiman[3]
[1]Department of Physics, Government College Kaithal, Kaithal, Haryana, Kurukshetra University, Kurukshetra (136027), INDIA
[2]Department of Physics Rishihood Kanya Mahavidyalaya Sonipat, Haryana (131001), INDIA and
[3]Department of Physics Himachal Pradesh University Shimla (171005), INDIA

Introduction

Protoneutron star is a result of the gravitational collapse of a massive stellar core. Initially, it can have large radius of about 100 km and a temperature of 50-100 MeV. The Protoneutron star may be born with a large rotational kinetic energy and initially it will be differentially rotating. Due to the violent nature of the gravitational collapse, the PNS gets hot by emitting significant amounts of gravitational radiation. After a few hundred gravitational periods, bulk viscosity will damp the pulsations significantly. Rapid cooling due to deleptonization transforms the PNS, shortly after its formation, into a hot compact star of $T \sim 10$ MeV [1] In the present work the keplerian configurations of rapidly rotating protoneutron stars have been computed in framework of general relativity by solving the Einstein field equations for stationary axisymmetric space time (e.g. see Ref.[2] and references therein). The numerical calculations have been performed by employing the Rotating Neutron Star (RNS) code [3]. In the present work we have employed a set of parameterizations of the Extended Relativistic Field Model(ERMF) as ERF1 - ERF21 [4, 5], generated by varying the ω meson self-coupling ζ and neutron skin thickness Δr for the ^{208}Pb nucleus.

The mass and radius have been calculated by employing various parameterizations of extended RMF model at 0, 5 and 10 MeV temperature of nuclear dense matter. In this paper we extended the previous work [6] and computed the mass at keplerian frequency using the relation

$$M_{\nu} = a1 * \nu^2 - a2 * \nu + a3 * M_{static} \quad (1)$$

and compared it to the value obtained from RNS code at temperature of 0, 5 and 10 Mev.

Result and discussion

It is found that keplar frequency decreases with rise in temperature and also decreases with the increase in neutron skin thickness(Δr) of ^{208}Pb from 0.16 to 0.20 fm. The kepler frequency further decreases on increase of value of ω meson self-coupling (from 0.00 to 0.10). We verified the empirical relation 1for all the parameterization of ERMF as given in table I. The best fit values which computed the keplerian frequency are computed to be a1 = 3.04×10^{-7}, a2 = 4.03×10^{-4} and a3 = 1.29. From table I it is clear that all the empirical relation is followed by all the parameterizations of ERMF model at all temperatures.

References

[1] M. Marques, M. Oertel, M. Hempel, and J. Novak, Phys. Rev. C **96**, 045806 (2017).
[2] N. Stergioulas, Living Rev. Rel. **6**, 3 (2003).
[3] N. Stergioulas and J. L. Friedman, Astrophys. J. **444**, 306 (1995).
[4] S. K. Dhiman, R. Kumar, and R. K. Agrawal, Phys. Rev. C **76**, 045801 (2007).
[5] R. K. Agrawal, Phys. Rev. C **81**, 014323 (2010).
[6] G. Mahajan, A. Sharma, and S. K. Dhiman, Proceedings of the DAE Symp. on Nucl.Phys. **62**, 804 (2016).

International Journal of All Research Education and Scientific Methods (IJARESM), ISSN: 2455-6211
Volume 10, Issue 7, July -2022, Impact Factor: 7.429, Available online at: www.ijaresm.com

Validating Switch Variable of Flower Pollination Algorithm in Regression Test Case Prioritization

Priyanka Dhanvijay

Email: priyankadanve.it@gmail.com

Abstract

This study aims at analysing and validating the impact of switch variable of Flower Pollination Algorithm (FPA) in regression test case prioritization. The value of switch variable decides whether local or global optimization will take place. The present study makes an attempt to analyse the impact of switch variable with values ranging from 0.0 to 0.3 on test case prioritization in regression testing. The present study is an extension of the prior work done to implement FPA for test case prioritization in regression testing. To validate the study two case studies written in Java programming were used. The results were validated using the APFD metrics. From the empirical results it was deduced that values ranging between 0.0 and 0.2 of switch variable gave promising results for test case prioritization.

Keywords: *Flower Pollination Algorithm, Regression Testing, Test Case Prioritization*

1. Introduction

Software development life cycle immensely depends on the regression testing for the correct working of the software. Literature has witnessed that test case prioritization [1] is best branch for regression testing and has given many promising results. With the increase popularity of nature inspired metaheuristic algorithms [2,19] in optimization problems it becomes necessary to implement in domain with test case prioritization. This work is an extension of prior research work where Flower Pollination Algorithm (FPA) has been proposed and implemented for test case prioritization in regression testing [9]. The study has shown very promising result for test case optimization. FPA is governed by the use of switch variable. It has been mentioned by Xin-She Yang[10] that the best value for switch variable for any optimization problem is 0.8. FPA performs local and global search on the basis of the switch variable. If the value set for switch variable is less than 0.8 then global search is performed on the set of input data else local search is performed. There is a need to validate the impact of varying values for switch variable of FPA. The present study tries to validate the statement made by Xin-She Yang [10] by performing regression test case prioritization using FPA on two set of case studies picked from different sources. In the present study switch variable used in FPA has been validated by varying it's range from 0.0 to 0.3. The impact of varying value is analysed by APFD metrics for different set of prioritized test suite produced by FPA. These test suite are executed on different versions of case studies. The set of test suite that identifies all the faults for a given versions will have highest APFD value and this set will be of great importance to the tester. Therefore, it can be stated that the value of switch variable directly impacts the global search mechanism by pick test cases from a larger pool to give maximum code coverage to the software resulting in maximum fault coverage, hence resulting in higher APFD results. Further the study discusses the results in detail with the future scope of FPA.

2. Research Methodology

The main objective of the study is to validate and analyse the impact of switch variable on the global optimization done by FPA. To achieve the objective FPA algorithm is used, no implementation details are given in [9]. Two case studies written in java programming language are used. Puzzle Game Application (PGA) having LOC 346, with five unique faults versions and 35 test cases per version is taken from Github[8]. Area and Perimeter Application (APA) having 918 LOC, with eight unique faults versions and 113 test cases per version is taken from Stack Overflow [5]. TestNG (6.7) tool was integrated in Eclipse Oxygen [6] to automate the test scripts and to get the faults identified by each set of test cases. FPA produces prioritized set of test cases for all the applications with switch variable value ranging from 0.0 to 0.3. The impact of change in value of switch value for global optimization of FPA is analysed with the value of APFD metrics[3].Higher the value of APFD metrics for a given set of test cases, higher the chances of that test suite to be selected for testing advanced versions of software.

Software Test Case Prioritization Using Genetically Modified Flower Pollination Algorithm (Gm-Fpa)

Priyanka Dhareula and Anita Ganpati

Abstract: The Nature inspired Metaheuristic Optimization Algorithms (NMAOAs) motivate towards explorations to optimization problem in countless events. Numerous NMAOA have been employed in the extension of Test Case Prioritization (TCP) for Regression Testing (RT). There are some NMAOA that have not been thoroughly investigated for TCP in RT. One of the recent additions made to NMAOA is Flower Pollination Algorithm (FPA) that has not been used for TCP in RT as per the literature survey. This study has made a preliminary attempt to find the most effectives metaheuristic technique for TCP. The theoretical results have reflected that the Genetic Algorithm (GA) is the most prevalent NMAOA used for TCP. Although a particular NMAOA cannot be considered as efficacious for TCP. This study tries to bridge the gap between the most popular metaheuristic techniques used for TCP and recent addition made to NMAOA. The main objective of this study is to propose an enhanced metaheuristic TCP technique. Henceforth, the study proposes Genetically Modified Flower Pollination Algorithm (GM-FPA) for TCP in RT. Also, GA is used in the present study to perform TCP. GM-FPA is empirically evaluated by comparing the values of Average Percentage of Faults Detected (APFD) metrics with the APFD results of FPA, GA, and traditional approaches for TCP in RT. The empirical results have reflected that GM-FPA outperformed the FPA, GA, and traditional ways of TCP.

Index Terms: APFD, Flower Pollination Algorithm, Genetic Algorithm, Test Case Prioritization

1. INTRODUCTION

In this globe of technology, we are surrounded by software ubiquitously. With the paradigm shift, it becomes imperative to update the software as and when required. Whenever the software undertakes maintenance, it may lead to unwanted behavior that was not manifested in the earlier working version. Unintended behavior of the software can be analyzed by performing Regression Testing (RT). RT is a part of the maintenance phase. It is performed whenever software changes. RT is performed on the software to assess if the earlier working functionalities have been altered with the changes made to the software or not. To perform RT a pool of test cases is executed upon the application under consideration. Whenever the changes are incorporated in the software, the size of the test pool becomes bulky. It is rationally not possible to perform RT with such huge size of test pool due to limited time and cost constraints. Therefore, there is a huge (n) in the area of testing to deduce an effective mechanism to reduce the size of a test pool, so fine effective RT can be performed in given constraints. There are few traditional ways of optimizing test cases namely minimization, selection, prioritization, and re-test all approach [Pressman 2005, Aggarwal & Yogesh 2007]. In this study Test Case prioritization (TCP) is used to order the test cases, so that higher priority test cases can be executed earlier to achieve maximum fault coverage in minimum possible time. A number of traditional approaches are known to exist [Dhareula and Ganpati 2018, Dhareula and Ganpati 2019] in various studies that perform test case optimization for RT. This study tries to bridge a gap between traditional ways of TCP and recent approaches, known as Nature Inspired Metaheuristic Optimization Algorithms (NMOA), for optimizing problems in the dominion of software engineering [Yang 2014]. This study tries to find the most efficacious metaheuristic technique for TCP as per the literature available. Genetic Algorithm (GA) is used in this study to perform TCP. The main objectives of this study is to propose an enhanced metaheuristic technique for TCP. Henceforth, the study proposes Genetically Modified Flower Pollination Algorithm (GM-FPA) for TCP in RT. The proposed technique is compared with Flower Pollination Algorithm FPA (Dhareula and Ganpati 2019), GA and Traditional approaches for TCP in RT.

2. RELATED WORK

Bilal and Sangwan (2018) used Artificial Bee Colony (ABC) optimization algorithm to propose TCP technique. Their technique is compared with GA and Cuckoo Search (CS). As per their study, GA and ABC outperformed Cuckoo Search for test suite with small size. Average Percentage of Statement Covered (APSC), Average Percentage of Blocks Covered (APBC), Average Percentage of Faults Covered (APFC) metrics, and time of execution is used to perform the comparison. Bohem and Ramgarajoo (2019) used code coverage criteria to perform TCP by proposing modified GA. Their technique is compared with Bee Colony Optimization (BCO) algorithm. They inferred that BCO is highly complex as compared to GA. Therefore, it is stated in their study that BCO is not suitable for TCP. [Jun et al. 2011] used improved GA for TCP. To determine the effectiveness of their approach, APBC metrics is used. Their technique resulted in better rates of error finding. [Yadav and Dutta 2017] used statement coverage detail as input to GA for TCP. APBC is used to determine the effectiveness of the proposed technique. Comparison of their technique is performed with random and reverse prioritization. Their study produced optimum results. [Wang et al. 2017] performed TCP by hybridizing Simulated Annealing (SA) and GA algorithm. Applications written in Java and C were used to analyze the efficiency of proposed Annealing Genetic Algorithm. [Ahmad et al. 2018] proposed a hybrid approach for TCP by combining Ant Colony Optimization (ACO) and GA. In their technique initially test cases are generated and later prioritized based on fault detection rate and time of execution. [Mann et al. 2018] came up with Test Case Generation (TCG) and TCP techniques. Particle Swarm Optimization (PSO), ABC, and GA are used for TCG and PSO is used for TCP. In their study ABC outperformed PSO and GA for TCG. [Rathore 2012] proposed enhanced Clonal Algorithm (CLONALG). They used a benchmark program for elaborate experiments and compared CLONALG with Quantum Particle Swarm

International Journal of Recent Technology and Engineering (IJRTE)
ISSN: 2277-3878, Volume-8 Issue-3, September 2019

Cuckoo Search Algorithm for Test Case Prioritization in Regression Testing

Priyanka Dhareula, Anita Ganpati

ABSTRACT: ***There are countless optimization problems that have been accelerated by Nature Inspired Metaheuristic Optimization Algorithms (NIMOA) in the earlier decades. NIMOA have gained huge popularity owing to their effective results. In this study NIMOA namely, Cuckoo Search Algorithm (CSA) is used to prioritize (order) the test cases for Regression Testing (RT). Prioritizations aids in the execution of higher priority test cases to give early fault detection. This research adopts the aggressive approach of reproduction made by Cuckoos to prioritize the test cases for RT. Average Percentage of Fault Detected (APFD) metrics is used in this paper for validations of results. APFD metrics is used to compare the performance of CSA with Flower Pollination Algorithm (FPA) and traditional approaches for Test Case Prioritization (TCP). Two java applications are used for the study. CSA is implemented in Java on eclipse platform. It is learnt from the study that APFD results of CSA outperformed the FPA for both the applications namely Puzzle Game and AreaandPerimeter. It is inferred from the results that prioritized set of test cases given by NIMOA outperformed the APFD results of traditional approaches and also CSA performed better than the FPA for TCP.***

Key Terms: Cuckoo Search; Flower Pollination; Regression Testing; Test Case Prioritization; APFD

I. INTRODUCTION

The lifespan of a software development considers Regression Testing (RT) as one of the most crucial phases. With the change in organizational requirements it becomes necessary to incorporate the changes in the software under consideration. Changes may result in unintended behavior of the software, which is further identified in RT. RT is performed to determine whether previous tested code has not altered its functionality due to new changes made in the software. RT is a time extensive and costly process. Since the test suite employed to perform RT is very large in size, it is rationally not possible to perform such exhaustive testing due to budget and time constraints as the software has to be delivered within given time limits. Therefore, it becomes imperative to constitute a mechanism to reduce the size of test suite to perform effective testing that can find maximum faults in minimum possible time.

Manuscript published on 30 September 2019
* Correspondence Author
Priyanka Dhareula*, Computer Science Department, H. P. University, Shimla – 171005, H. P., India
Anita Ganpati, Computer Science Department, H. P. University, Shimla – 171005, H. P., India

Many traditional Regression Test Case Optimization (RTCO) techniques are known to exist in the past literature. Broadly they are categorized as Retest all, Minimization [1], Selection [12, 9] and Prioritization [12]. Alone these techniques have not resulted in effective optimization of the test suite and henceforth, there is a need to augment them with improvised version of optimization techniques known as the Nature Inspired Metaheuristic Optimization Algorithms (NIMOA).

Numerous NIMOA are known to have produced optimized results in the field of RTCO. Many NIMOA have existed for past few decades namely; Genetic Algorithm (GA), Differential Evolution, Ant Colony Optimization (ACO), Bee Colony Algorithms, Particle Swarm Optimization, The Firefly Algorithm, Cuckoo Search Algorithm (CSA) [16], The Bat Algorithm, Harmony Search, The Flower Pollination Algorithms (FPA); are few to name. Therefore, when the traditional RTCO approaches [5, 6] are combined with NIMOA [11] it will result in much more effective results for RT. In this paper Cuckoo Search Algorithm (CSA) [16] is used to prioritize the test cases to perform RTCO. CSA was developed by Xin-She Yang and Suash Deb in 2009 [19]. Cuckoos have mesmerizingly beautiful sound and a very aggressive reproduction approach. This research adopts the aggressive approach of reproduction made by Cuckoos to prioritize the test cases for RT. Therefore, CSA is used in this study to perform TCP without any prior knowledge of faults covered by the test cases. Average Percentage of Fault Detected (APFD) metrics and time of execution is used to determine the effectiveness of CSA for TCP. For the validations of the results APFD values of CSA is compared with the APFD values of FPA [4] and traditional approaches for TCP in RT.

II. RELATED WORK

Yang [19] discussed about various applications of CSA in the dominion of engineering and science. Their study stated that tuning of parameters for metaheuristic algorithms demands more research. It is identified in their work that optimal results can be achieved by using CSA in various studies. Srivastava et al. [14] gave an algorithm to produce reduced test suite using CSA. Activity diagram is used to understand the connection between modules, thereafter the input is given to a graph whose output serves as the input to proposed strategy. Warning System for temperature is used as the case study. Proposed technique is compared with ACO and GA. As per their study CSA produced optimal results in lesser number of iterations. Ahmed et al. [2] in their study used CSA to perform combinatorial test case optimization. Real world case study is used to analyze the effectiveness of the optimized set of test cases.

VOICES OF SIKH GURUS: REPRESENTING WOMEN, NATURE AND SPIRITUALITY IN NANAK: THE CORRESPONDENT OF THE ULTIMATE AND TIMES OF GURU GOVIND SINGH

DR. LEELA DHAR
Assistant Professor in Department of English, Govt. College Bilaspur, Himachal, H.P.

ABSTRACT

India has been a country of many religions, castes and ideologies since ancient time. Religions like Hindu, Muslim and Sikh have been dominating her for many years. Although one can notice a few events of violence among Hindus, Muslims and Sikhs during Mughal Era, Partition of India and during 1984, yet there is no comparison during freedom struggle, their pivotal role in eradicating Orthodoxy and their support in wars like 1962, 1965, 1971 and 1999 can never be forgotten till the very existence of united India. History is the witness to the fact that Sikh community, despite being a minority, contributed a lot in maintaining India's grand culture and unity. Sikhs are not only considered as warrior, fighter and farmer but also hard working and helpful which they are even helping the poor and serving in Langars (free kitchens of their Gurus) who have always been pre-existent during Lockdown situations. Their preaching and teachings convey a message to all of us to preserve nature and save women from tyranny of evil people. The present paper titled as 'Voices of Sikh Gurus: Representing Women, Nature and Spirituality in Nanak The Correspondent of the Ultimate and Times of Guru Gobind Singh' is an attempt to explore the sublime voices which have been under serious fire by rigid regime of dogmas and other social evasions. It also explores how Sikh Gurus withdrawn power, preach spirituality and promoted nature through their teachings.

KEYWORDS
Nirankar, Nature, Culture, Religion and Spirituality

INTRODUCTION

Sikh community is known for its ten Gurus who took this community to marvelous heights. History is the witness to the fact that Guru Nanak has been first Guru of Sikh. After that, Guru Angad Dev, Guru Amar Das, Guru Ram Das, Guru Arjun Dev, Guru Hargobind, Guru Har Rai, Guru Har Krishan, Guru Tegh Bahadur became Gurus and preached people with their sense of spirituality. And Guru Gobind Singh was the tenth and the last Guru of Sikh. After him, Sikh lineage of Gurus is believed to be ended. Guru Gobind Singh said that Adi Granth would be the spiritual Guru of Sikh community in the coming times. If one talks about the role of Gurus in political and social areas, one comes to know that they played a vital role in maintaining nation and contributed a lot in maintaining peace in society. They came forward when the country was under the dark cloud of fanatical hands. The voices of Sikh Gurus were full of rationalism and universalism paving the way for the coming generation to have tolerance and peace. Although all the Sikh Gurus had philosophical and imaginative sense, yet a few Gurus are replete with poetic sensitivity and sense of lyrical analysis. History tells us that Gurus like Teg Bahadur and Guru Gobind Singh sacrificed their lives for the sake of their

ISSN: 2278-4632
Vol-10 Issue-5 No. 20 May 2020

PREDICTION OF COMPETITION PERFORMANCE OF SPRINTERS ON THE BASIS OF BODY COMPOSITION, EMOTIONAL INTELLIGENCE AND PHYSIOLOGICAL CHARACTERISTICS

Dr Sanjay, Sharma, Assistant Professor, Department of Physical Education, H. P. University, Shimla

Mrs Surishtha, Devi Research Scholar, Department of Physical Education, H. P. University, Shimla

Dr Manohar, Lal Professor, G.H.G. Khalsa College, Gurusar Sadhar, Ludhiana (Punjab)

Ms Yamuna Sharma Assistant Professor, Govt P G College Karsog (H.P)

Abstract:

Athletes differ from each other in their characteristics according to their events. This study aimed to identify performance predictors in 100m sprinters of All India inter-university taking into consideration their body composition, emotional intelligence and psychological characteristics. Twenty-three sprinters participated in this study. The measurements of body composition characteristics were done with the help of Body Composition Monitor having Scale HBF-361. In order to evaluate emotional intelligence, the scale developed by Hyde, Pethe, and Dhar was used. Dry spirometer was used to measure vital capacity, Harvard step test was used to measure the Vo2 max, Manual methods was applied to measure the basal pulse rate and standardized digital sphygmomanometer was used to measure blood pressure. Multiple linear regression analysis was applied to identify the best model for performance prediction. Results indicated that the regression model explains the significant variance in competition performance of 100m sprinters and can be used for the predictions. Body composition, emotional intelligence and physiological characteristics accounted for 77% of the variance in performance for 100m sprinters. The most significant predictors of 100 m sprint performance in female sprinters were vital capacity and body mass index.

Key Words: Body composition, Emotional intelligence, Physiological characteristics, Competition performance and sprinters.

Introduction:

In the recent years, it has been found that issue which influence optimal performance in athletics events has received considerable attention in the scientific literature. Variables which have been associated with running performance include body composition, physical characteristics and

Emerging Trends in Art and Literature

Chapter 21

POST-PARTITION NOSTALGIA: A STUDY OF INTIZAR HUSAIN'S BASTI

LEELA KHAR

The Partition of India in August 1947 was a man-made calamity that affected masses adversely. The trauma of the event was embedded in the psyche of those who were forcibly uprooted from their homeland. The trauma of partition and its aftermaths affects the collective memory and has affected the present to a large extent. Partition proved to be different for different people and communities. For India, it was just like breaking of an arm from one's body. For Pakistan, it brought happiness of independence. Similarly, it turned out to be a land of dreamland for Muslims as presented by their political leaders while in Indian context, it left many scars of pain and suffering behind. Moreover, the perceptions of nation's past nostalgic change with the passage of time as every generation rewrites history in different ways. The Partition of India became a subject matter for different people. For historians it became a matter of calculation and cause and consequences of this cataclysmic event. But the history written by historians lacked the emotions and loss caused by the event. So if one seek for looking at the event from a perspective of the marginal experiences of the ordinary people and voices of the suppressed ones which were missed by historians, one need to turn towards the literary accounts of partition.

Partition of India drew the attention of many writers to make it explored. Writers like Khushwant Singh in his Train to Pakistan (1956), Manohar Malgonkar in his work A Bend in the Ganges (1964), Chaman Nahal in Azadi, Raj Gill in The rape, Kartar Singh in Twice Born Twice Dead, Bhisham Sahani in Tamas, Yashpal in his work Jhootha Sach, Kamaleshwar in Kitne Pakistan, Shashi Tharoor in The Great Indian Novel, Salman Rushdie in Midnight Children extensively explored the partition theme and its multiple dimensions with their different point of views.

However, there have been many writers who reside in abroad due to dislocation caused by Partition. Writers who live outside India, they still write about their homeland nostalgically are Qurratulain Hyder, Attia Hosain, Bapsi Sidhwa, Moin Mansoor, Amrit Chopra, Krishna Sobti, Amitav Ghosh. Attia's Laila, the protagonist in Sunlight on a Broken Column is filled with nostalgia when she visits Ashiyana getting surprised to see her house filled with refugees. Ashiyana which symbolically "indicates that the Muslims had made India their home" (Sharma 8). Similarly, in River of Fire Hindu-Muslim affinity is reflected in this way "The Nawab Vazira of Oudh banned the killing of monkeys in deference to the Hindu Monkey God, a

राग वाटिका

भाग-01

ऋषभ भारद्वाज

राग वाटिका

"Ragas are nothing but different moods and emotions preserved in the form of sounds"

Rishabh Bhardwaj

"Only 12 Different sound patterns known as notes, with various varieties, woven into a particular melody, every time with new freshness is called raga"

Rishabh Bhardwaj

musicinjungle@gmail.com

Evincepub Publishing

ACADEMIC

Evincepub Publishing
Parijat Extension, Bilaspur, Chhattisgarh

First Published by Evincepub Publishing 2019

ISBN: 978-81-942379-0-7
Price: Rs.175/-

राग वाटिका

भाग - १

ऋषभ भारद्वाज

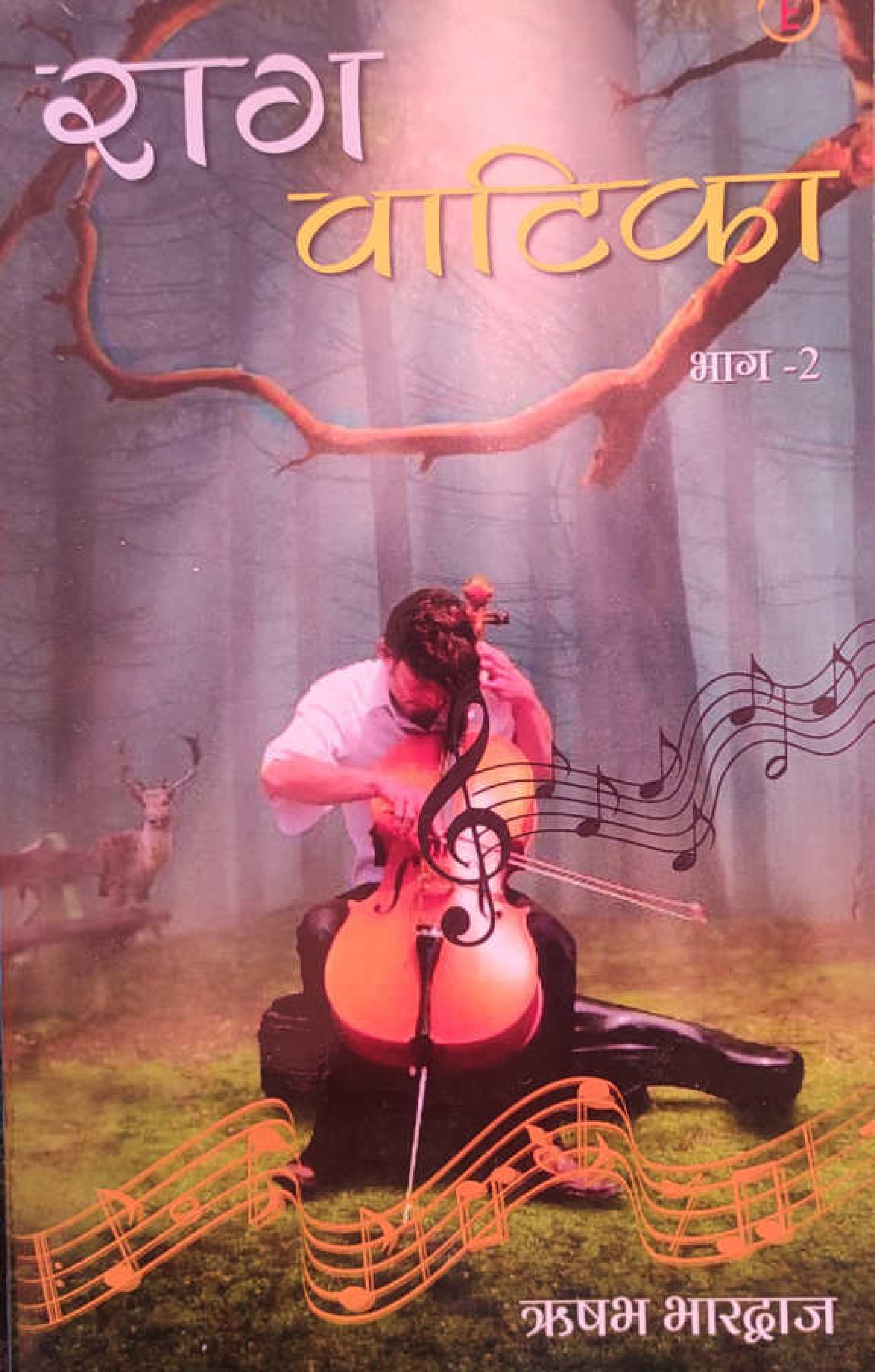
शास्त्रीय संगीत के सुप्रसिद्ध रागों के रागांग/ उप-रागांग

Sr.No	रागों के अंग	रागांग स्वर संगति
1	**भैरव** अंग	ग म रे सा तथा प ध नि सां
2	**तोड़ी** अंग	रे ग रे सा
3	**सारंग** अंग	रे म रे तथा म प नि सां नि प
4	**कान्हड़ा** अंग	ग म रे सा तथा नि प
5	**बागेश्वरी** अंग	सा नि ध नि सा तथा म ग म ध
6	**बहार** अंग	प ग म ध नि सां
7	**बिलावल** अंग	ग म रे तथा ध नि सां
8	**नट** अंग	रे ग म प, ग म रे तथा सा सा, रे रे, ग ग, म म, प रे
9	**गौड़ अंग**	सा ग, रे म ग
10	**मल्हार** अंग	म रे, रे प तथा म प नि प
11	**कल्याण** अंग	प रे तथा म ध नि सां
12	**खमाज** अंग	ग म प ध नि ध, म प ध म ग
13	**कौंस** अंग	सा ग म ग सा तथा ध नि ध म
14	**पूरिया अंग**	नि रे ग , रे नि तथा नि म ग
15	**श्याम** अंग	सा रे म प
16	**पीलू** अंग	सा ग रे सा नि
17	**भैरवी** अंग	सा रे ग म तथा प ध नि सां
18	**कामोद** अंग	ग म प, ग म रे

19	**धनाश्री** अंग	म प ग रे सा तथा म प नि ध प
20	**तिलंग** अंग	प नि सां नि प म ग
21	**ललित** अंग	ग म मं म ग
22	**बिहाग** अंग	नि सा म ग तथा सा ग म प नि
23	**देस** अंग	ध म ग रे तथा सां रे नि ध प
24	**दुर्गा** अंग	म रे प, म रे ध सा
25	**केदार** अंग	सा म, म प, म म रे सा
26	**सोरठ** अंग	रे म प नि ध प

सरगम बाटिका

भाग -2



ऋषभ भारद्वाज

राग चाटिका

भाग -2

"किसी भी राग में रूहदारी अलग से आने वाली चीज़ नहीं है बल्कि उसी राग के आरोह-अवरोह की प्रमुख स्वर संगतियों में और उस राग की कोमलता में पहले से ही छिपी होती है। संगीत कलाकार तो उसे अपनी समझ, मेहनत और अभ्यास से केवल सौंदर्य के रूप में प्रकट करके सबके सामने लाता है।"

– ऋषभ भारद्वाज

"There is a huge difference between mechanical singing and melodious singing. Hindustani Ragas are melodious in nature itself. It's only a musician, who makes the ragas mechanical or melodious, based on his knowledge and expertise."

-Rishabh Bhardwaj

musicinjungle@gmail.com

Evincepub Publishing

ISBN 978-93-89988-28-4

Evincepub Publishing
Parijat Extension, Bilaspur, Chhattisgarh 495001
First Published By Evincepub Publishing 2020

ISBN: 978-93-89988-28-4
MRP:Rs. 275/-

राग वाटिका

भाग -2

लेखक
ऋषभ भारद्वाज

लेखक परिचय

नाम : ऋषभ भारद्वाज
जन्म : 1986, धर्मशाला, ज़िला – कांगड़ा (हि०प्र०) भारत

मूलतः :पुराना बाज़ार करसोग, तहसील एवं डाकघर करसोग, ज़िला-मंडी (हि०प्र०)

शिक्षा :M.A. & M. Phil – Music (Vocal), UGC – JRF, संगीत प्रभाकर (गायन)

विशेष :वर्ष 2011 से वर्ष 2019 तक (08 वर्ष 2 माह तक) मानव संसाधन मंत्रालय, भारत सरकार के

अंतर्गत केन्द्रीय विद्यालय संगठन में संगीत शिक्षक के रूप में नियमित कर्मचारी के रूप में

शिक्षण कार्य।

राजकीय महाविद्यालय सरकाघाट में शिक्षण कार्य।

प्रकाशन : अंतर्राष्ट्रीय पत्रिकाओं में शोध पत्र के प्रकाशन, ग़ज़लों पर आधारित किताब (तन्हा काफ़िला)का प्रकाशन, राग वाटिका, भाग- 01 का प्रकाशन।

वर्तमान : Assistant Professor , Department of Music (Vocal)
Govt. College Karsog (H.P.)

संपर्क : मोबाइल नं० 070182 – 92644 , E-mail :
musicinjungle@gmail.com
Facebook : Rishabh Anuragi , instagram - @rishabh_anuragi

राग से जुड़ी बड़े महत्व की 16 प्रमुख बातें जिनके होने से राग, राग बनता है

1. थाट
2. जाति
3. वादी स्वर
4. संवादी स्वर
5. गायन समय
6. न्यास के स्वर
7. तानपूरा मिलान (ग, म, प या नि स्वर में से किसी एक स्वर पे)
8. वर्जित स्वर
9. चाल (सपाट / वक्र)
10. चलन (किसी स्वर का प्रयोग और लंघन आदि)
11. रागांग स्वर संगति
12. Mood / प्रकृति
13. समप्रकृत राग (तुलनात्मक अध्ययन)
14. रागवाचक स्वर संगति
15. स्वर विस्तार का झुकाव (किस सप्तक में)
16. राग विस्तार की प्रमुख स्वर संगतियाँ

भारतीय संगीत के कुछ जोड़ राग / Ragas made by blending

S.No	जोड़ राग	मिश्रण के राग
1	जयंत मल्हार	जयजयवंती + मियाँ मल्हार
2	बसंतमल्हार	बसंत + बहार
3	दीपावली	यमन (पंचम वर्जित) + ललित अंग
4	शुद्ध कल्याण	भूपाली + यमन
5	जट भैरव	जट अंग + भैरव
6	बसंत मुखारी	भैरव + भैरवी
7	अहीर भैरव	भैरव + काफी
8	पूरिया कल्याण	पूरिया + यमन
9	अहीरी तोड़ी	अहीर अंग + तोड़ी अंग
10	सूर मल्हार	सारंग अंग + मल्हार अंग
11	प्रभात भैरव	भैरव + ललित
12	जोगकौंस	जोग + चंद्रकौंस
13	मधुकौंस	मधुवंती + कौंस अंग

Evincepub Publishing

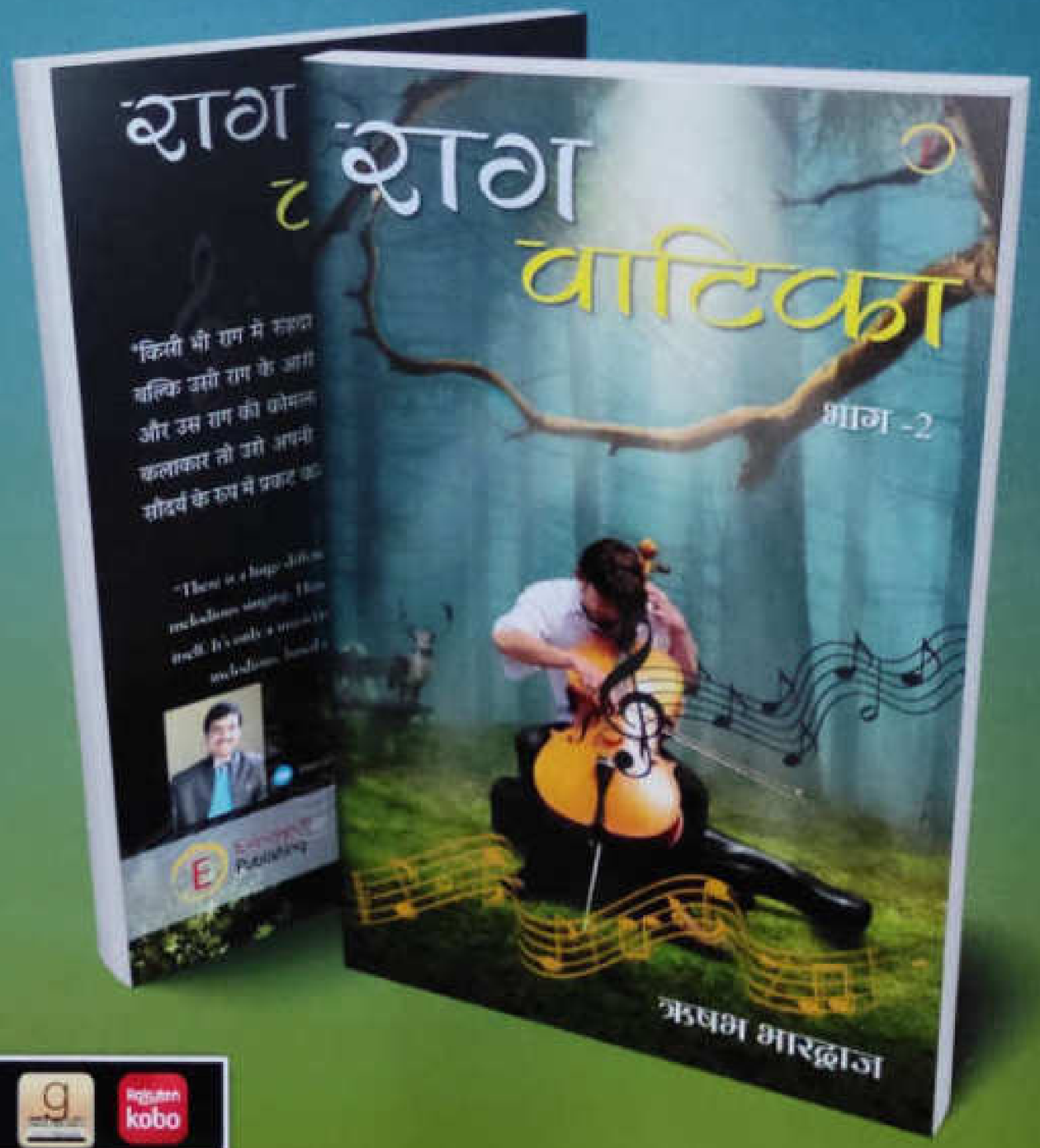
www.evincepub.com

RELEASED WORLDWIDE

राग वाटिका

भाग -2

BY RISHABH BHARDWAJ



ORDER NOW

evincepub.com amazon Flipkart kindle kobo

A PUBLISHED AUTHOR

This is awarded to

RISHABH BHARDWAJ

BOOK: RAAG VATIKA BHAG - 2

ISBN: 9789389988284

In appreciation of your excellent literary work resulting in a great achievement as a self-published author. We appreciate your work and dedication towards literature.

Given 22 Day OF Jun, 2020

EVINCEPUB PUBLISHING

Authorised Signatory

Evincepub Publishing

From all of us at.

EVINCEPUB PUBLISHING

www.evincepub.com

Acta Scientific AGRICULTURE (ISSN: 2581-365X)

Volume 5 Issue 2 February 2021

Research Article

Characterization of *Bacillus weihenstephanensis* AGII: A Psychrotolerant Bacteria Isolated from Rhizosphere of Medicinal Plant *Gentiana kurroo* Royle

Neha Gautam[1]*, Pankaj Sharma[2], JC Rana[3] and Mohar Singh[4]

[1]*Department of Microbiology, St. Bede's College, Navbahar Shimla, Himachal Pradesh, India*

[2]*Department of Botany, Govt. Degree College, Karsog, District Mandi, Himachal Pradesh, India*

[3]*Division of Germplasm Evaluation, ICAR-National Bureau of Plant Genetic Resources, New Delhi, India*

[4]*National Bureau of Plant Genetic Resources, Regional Station, Phagli, Shimla, Himachal Pradesh, India*

***Corresponding Author:** Neha Gautam, Department of Microbiology, St. Bede's College Shimla, Himachal Pradesh, India.

DOI: 10.31080/ASAG.2020.05.0949

Received: November 02, 2020

Published: January 28, 2021

Abstract

The beneficial bacteria present in the area around the plant roots. These are termed as Plant Growth Promoting Rhizobacteria (PGPR). These bacteria are useful to enhance plant growth and curb plant diseases. The objectives of the present study were to isolate, identify and characterize PGPR traits in psychrotolerant bacteria native to rhizosphere of a threatened high valued medicinal plant *Gentiana kurroo* Royle. In total 10 bacterial isolates were isolated, out of which isolate AGII showed maximum antagonism against tested phytopathogens. Therefore, isolate AGII was selected further to study in vitro growth promoting attributes and for phylogenetic identification. Bacterial isolate AGII was identified as *Bacillus weihenstephanensis* by 16SrRNA gene sequence and has been registered in NCBI under the accession number MF593886. Plant growth promoting traits of this isolate were studied by performing following assays *viz*., Phosphate solubilization, Ammonia Production, HCN production, Protease production. The isolated bacterial strain was studied for its inhibitory potential against deadly plant pathogens by using a dual culture *in vitro* assay. In the present investigation, *Bacillus weihenstephanensis* MF593886 was tested against deadly plant pathogens viz., *Alternaria solani* MTCC 2101, *Botrytis cinerea* MTCC 2350, *Fusarium oxysporum* MTCC 7677, *Rhizoctonia solani* MTCC 4633, *Colletotrichum gloeosporioides* MTCC 9664 and *Sclerotinia sclerotiorum* MTCC 8785. It is capable to produce siderophore, HCN, ammonia, proteases and has a potential to solubilize phosphates. The present study proposes the potential of *Bacillus weihenstephanensis* as a PGPR in the context of cold agro-ecosystems.

Keywords: Bacillus weihenstephanensis; Biofertilizers; Psychrotolerant; PGPR; Proteolysis; Siderophore

Introduction

Gentiana kurroo Royale is a critically endangered plant of Western and North Western Himalaya. This drug plant is critically endangered and is at high risk category as far as its survival is concerned due to its over exploitation habitat destruction and unscrupulous collection [1]. To establish such plants in new environment, the study of their microflora is a must. In the present investigation, soil associated with the roots of *Gentianakurroo* has been used for isolation of PGPR. These PGPR are the beneficial bacteria that assertively inhabit in vicinity or on plant roots and provides benefit to the plants by a variety of mechanisms viz. by fixing nitrogen, making plant growth regulators, inhibiting phytopathogenic

IJARESM

ISSN: 2455-6211, New Delhi, India
International Journal of All Research Education & Scientific Methods
An ISO & UGC Certified Peer-Reviewed Multi-disciplinary Journal

Certificate of Publication

[illegible]

TITLE OF PAPER

हिन्दुस्तानी शास्त्रीय संगीत में राग गायन समय सिद्धान्त की दृष्टि से प्रात काल का महत्व

has been published in

IJARESM, Impact Factor: 7.429, Volume 9 Issue 5, May- 2021

Paper Id: IJARESM/May21

Date: 07-05-2021

Website: www.ijaresm.com
Email: editor.ijaresm@gmail.com

Authorized Signatory

IJARESM

ISSN: 2455-6211, New Delhi, India

International Journal of All Research Education & Scientific Methods

An ISO & UGC Certified Peer-Reviewed Multi-disciplinary Journal

Certificate of Publication

ओम प्रकाश कौशल

शोधार्थी (Ph.D) हि0 प्र0 ए विरवविद्यालय, शिमला

TITLE OF PAPER

हिन्दुस्तानी शास्त्रीय संगीत में रागों के प्रचलित एवं अप्रचलित होने के प्रमुख कारणों का विश्लेषण

has been published in

IJARESM, Impact Factor: 7.429, Volume 9 Issue 4, April - 2021

Paper Id: IJARESM/Apr21

Date: 14-04-2021

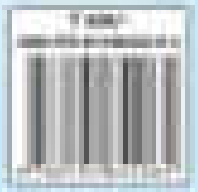
Website: www.ijaresm.com

Email: editor.ijaresm@gmail.com

Authorized Signatory

Dr. Gopal Ji Singh is working as an Assistant Professor in PG Department of Economics, Magadh University Bodh Gaya. He did his graduation, Post-Graduation in Economics and completed his Ph.D. with research title 'Impact of trade on Environment in India since 1991' from Banaras Hindu University. His specialization is in Econometrics. He has eleven publications in reputed journals. He participated more than 20 national and international seminars and workshops. He is the editor of two edited books. He is also member of editorial board of journal of World Economic Research, New York, U.S.A.

World Lab Publication



EFFECT OF COVID-19 ON SUSTAINABLE DEVELOPMENT IN INDIA • Dr. Gopal Ji Singh

EFFECT OF COVID-19 ON SUSTAINABLE DEVELOPMENT IN INDIA

Dr. Gopal Ji Singh

The Effects of COVID-19 on Priority Sector Lending of Commercial Banks

—*Dr. Sanjeev Kumar*
Associate Professor, Department of Economics
Himachal Pradesh University, Summer Hill, Shimla HP

—*Dr. Prem Prakash*
Assistant Professor, Department of Economics,
Govt. Degree College Serai at Lambathach,
District Mandi, Himachal Pradesh

Abstract

The growth of priority sector credit during pre and amid COVID-19 period of commercial banks for 12 months from July 2019 to June 2020 has been analyzed in this paper. The period of 12 months is sub-divided in two parts to have a better comparative analysis of bank credit to priority sector. The period I, includes the months from July 2019 to December 2019 and period II stretching over the months from January 2020 to June 2020. The entire study is based upon secondary data and all the required information is collected from the various relevant issues published by the RBI. The objective is to study the growth of priority sector credit by commercial banks during period I (Pre COVID-19 Period) and II (amid COVID-19 Period), and for this purpose, the exponential growth rate has been calculated. It was observed that the bank credit deployed in agriculture and allied activities sector recoded a very low rate of growth during pre COVID-19 period and nil rate of growth amid COVID-19 period. The bank credit to micro & small enterprises sector recorded a declining rate of growth in period I as well as period II. It was also observed that the commercial banks credit to manufacturing sector recoded a negative rate of growth during the pre vis-à-vis amid COVID-19 period. However, the bank credit to services improved amid COVID-19 period in comparison to pre COVID-19 period. The noticeable change which occurred in the components of 'other priority sector' was in micro-credit of the banks which decreased by a rate of -0.80 per cent amid COVID-19. The situation remained pathetic even in case of education loans advanced by the commercial banks in both the periods as the rate of growth continued to decline in Pre and amid COVID-19 period.

RETHINKING HIMALAYA

ITS SCOPE AND PROTECTION

EDITORS

KULBHUSHAN SHARMA

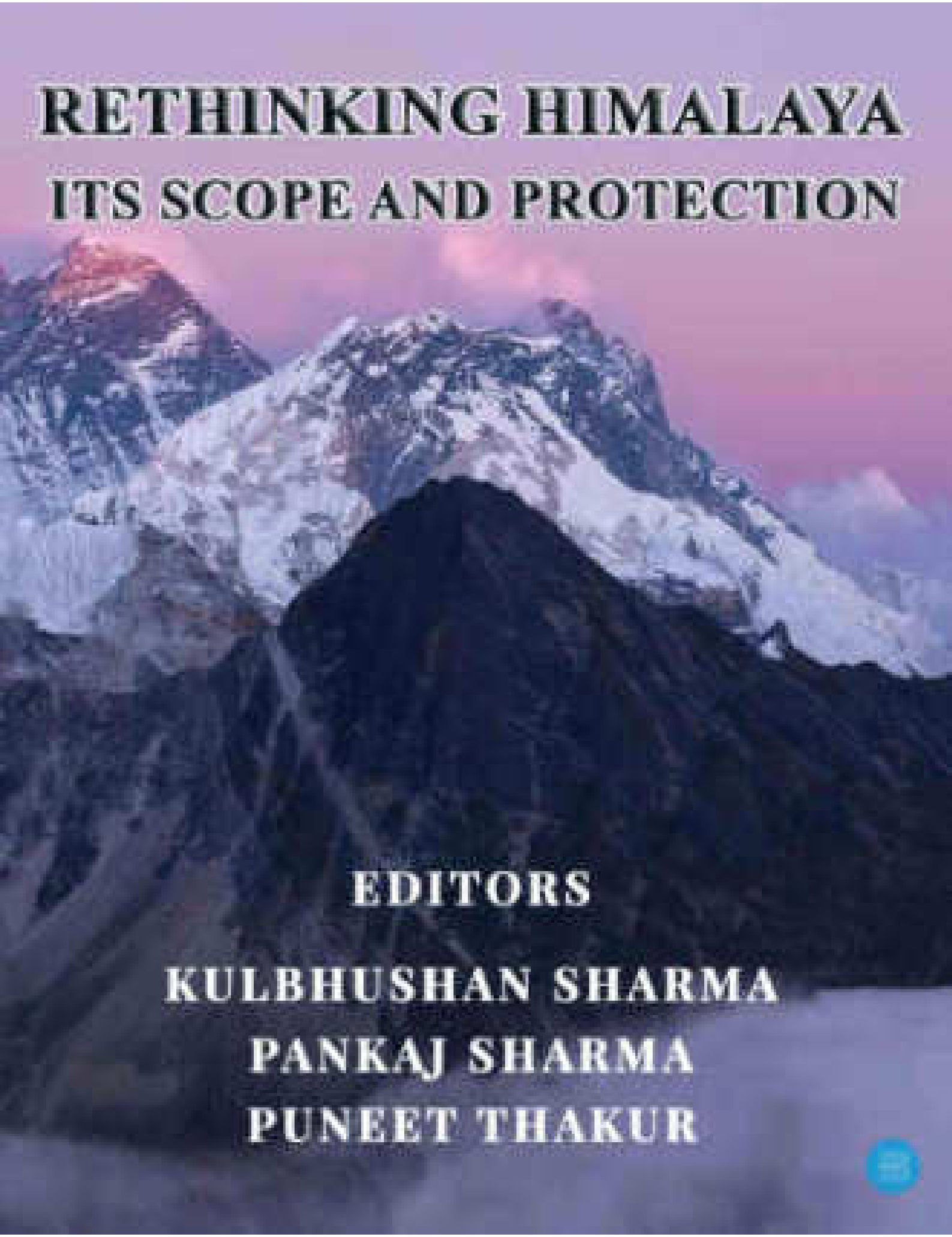
PANKAJ SHARMA

PUNEET THAKUR

BlueRose

RETHINKING HIMALAYA

ITS SCOPE AND PROTECTION



EDITORS

KULBHUSHAN SHARMA

PANKAJ SHARMA

PUNEET THAKUR

First Published in December 2023

ISBN: [illegible]

Price: INR [illegible]

BLUEROSE PUBLISHERS

www.bluerosepublishers.com

submit@bluerosepublishers.com

+91 8882 898 898

Cover Design:

[illegible]

Typographic Design:

Namrata Saini

Distributed by: BlueRose, Amazon, Flipkart, Shopclues

Contents

About the Contributors

Amit Jamwal, Scientific Professional, Agrobiotech Geoinformatics & Space Application Centre (AGNIC) at RDA Complex, Kasauli Mandi, HP

Anil Kumar Singh, Assistant Professor, Department of Tourism Management, BHU, Varanasi

Anupama Sharma, Assistant Professor, Department of English, Government College Seraj at Lambathach, Dist. Mandi, HP

DC Rana, Department of Environment, Science and Technology, Government of Himachal Pradesh, Shimla

Govind Singh, Associate Professor, Department of Geography, University College Kullu, Dist. Kullu

Harish Bhatt, HP State Centre on Climate Change (HIMCOSTE), Vigyan Bhawan near Udyog Bhawan, Bemloe, Shimla, HP

Kesar Chand, Scientist-C, North East Regional Centre, G.B. Pant National Institute of Himalayan Environment (NIHE), Itanagar, Arunachal Pradesh (India)

Khub Chand, Assistant Professor, Department of Geography, Government College Seraj at Lambathach, Dist. Mandi, HP

Kiran Kumar, Scientist-E, GB Pant National Institute of Himalayan Environment, Kosi - Katarmal, Almora, Uttarakhand

Kishor Kumar, Assistant Professor, Department of Hospitality and Tourism Management, BHU, Varanasi

Kulbushan Sharma, Assistant Professor, Department of English, Government College Karsog, Dist. Mandi, HP

Leela Dhar, Assistant Professor, Department of English, Government College Karsog, Dist. Mandi, HP

MK Seth, Professor (Retired), Guest Faculty Member, Department of Bio Sciences, Himachal Pradesh University, Summer Hill, Shimla, HP

Nasreen Pathania, Assistant Professor, Department of English, Government College Jukhala, Dist. Kullu, HP

Nandini Thakur, GB Pant National Institute of Himalayan Environment, Himachal Regional Centre, Mohal Kullu HP

Pankaj Sharma, Assistant Professor, Department of Botany, Government College Karsog, District Mandi, HP

Pratima Yadav, Maharishi Markandeshwar University, Ambala, Haryana

Prem Prakash, Assistant Professor, Department of Economics, Government College Seraj at Lambathach, Dist Mandi, HP

Purrr Lal, Assistant Professor, Department of Economics, Rajkiya Kanya Maharchakra (RKAM), Shimla, HP

Rajat Thakur, GB Pant National Institute of Himalayan Environment, Himachal Regional Centre

Rakesh Kumar Singh, G.B. Pant National Institute of Himalayan Environment, Himachal Regional Centre, Mohal Kullu HP

Ram Lal Bhardwaj, Assistant Professor, Department of Economics, Rajkiya Gandhi Government College, Chaura Maidan, Dist Shimla, HP

Renu Lata, Scientist-C, GB Pant National Institute of Himalayan Environment, Himachal Regional Centre, Mohal Kullu HP

Satish Kumar Bhardwaj, Department of Environmental Science Dr Yashwant Singh Parmar University of Horticulture and Forestry, Nauni, HP

Siddharth Singh, Assistant Professor, Department of Hospitality and Tourism Management, IIHT, Varanasi

Sudhir Kumar, Assistant Professor, Department of Geography, Government College Sainwal, Dist Shimla, HP

Suresh C. Attri, Department of Environment, Science and Technology, Government of Himachal Pradesh, Shimla 171001, Himachal Pradesh

Usha Devi, National Medicinal Plant Board, Ministry of AYUSH, India

Vaibhav K. Gosavi, G.B. Pant National Institute of Himalayan Environment, Kosi-Katarmal, Almora, Uttarakhand

Vinod Kumar, Assistant Professor, Department of History, Government College Seraj at Lambathach, Dist Mandi, HP

Eco-Feminism and Folk Culture: Exploring Select Folk Songs of Himachal Pradesh

*[redacted]

Folk culture consisting of art, dance, and drama present not only entertainment but also reflects social standard and the mechanism of one's society. Broadly speaking, folk culture refers to the unifying communicative instrument of everyday life as enacted by localized, tradition-bound groups. On the other hand, folk literature refers to myths, legends, epics, fables, and folktales passed down orally from one generation to another. In order to be culturally literate one need to know the stories, songs, characters and situations of folk literature. Moving forward, oral literatures have been recorded and transcribed by various scholars for many years. Accordingly folk literature has been enriching by a variety of proverbs, idioms and phrases of folk manners and life. There are scholars who favour the linguistic side of folk literature and simultaneously consider proverbs as an integral part of language, for they are "in relation to ecology (society) raises a question of relationship between culture and literature on the one hand and culture and language on the other" (Bande 141).

The above discussion has been made to provide a backdrop to understand the specific debate within which this paper locates itself and to create a dialogue between the language and the content of folk songs. Of all forms of folklore, folk songs are the most popular, easily accessible and entertaining. They do not require any learning as a folk tale requires nor do they need any audience as a folk theatre does. A singer may sing in the fields, among the forests, on the mountain tops and in the deep village all alone with his own joy and amusement. If any one hears or listens to a singer he might get appreciation, but if none hears him he takes pleasure in what he sings. They keep on singing without knowing the underlaying meaning of the songs. Sometimes, these "folk songs reflect their happiness, misery, problems and worries" (Sareen 271).

Not only the lines but the concept of a folk song enhances the inherent dynamic character of a song. The folk songs are more enjoyed forms of folklore because they may have a rhyme or a musical line which makes them easily consumable, memorable and more audible. In the words of Upadhyaya "folk songs are like the fragrant flowers from the gardens of human heart plucked with deep devotion"(15).

In Himachal Pradesh one can perceive a number of folk songs. They are the most primitive and truest expression of hill life and are of tremendous interest during

Bubble structure in $N = 28$ isotones

Pankaj Kumar[1],* Virender Thakur[1], Vikesh Kumar[1], Smriti Thakur[1], Anupriya Sharma[1], Raj Kumar[1], and Shashi K. Dhiman[1]
[1]*Department of Physics, Himachal Pradesh University, Summerhill, Shimla-171005, INDIA*

Introduction

In general, the density of most nuclei is saturated ($\rho_0 \approx 0.16 fm^{-3}$) in the central region and is smoothly decreasing at the surface. However, this trend of nucleon density distribution shows a different behavior in some cases. In some nuclei, the density at the center is depressed with a hump nearby it, followed by a smooth decrease towards the surface region. This type of density distribution is known as "bubble" structure. The bubble structure is characterized by the central depression of nucleonic density and is currently a hot topic in nuclear physics.

The concept of reduction of density in the nuclear interior was first considered by Wilson [1]. By now, there exists appreciable literature to understand the occurrence of bubble-like structures in different mass regions. The degree of central depletion in proton or neutron densities can be quantified in terms of depletion fraction (DF), defined as

$$DF = \frac{\rho_{max} - \rho_{cen}}{\rho_{max}} \times 100\%, \qquad (1)$$

where ρ_{max} and $\rho_{cen} = \rho(r = 0)$ represent the values of maximum and central nucleon density, respectively.

Theoretical Formalism

A. Meson exchange model

The Lagrangian density for meson exchange model can be written as [2]:

$$\begin{aligned}\mathcal{L} &= \sum_i \overline{\psi_i}(i\gamma_\mu\partial^\mu - m)\psi_i + \frac{1}{2}\partial_\mu\sigma\partial^\mu\sigma \\ &-\frac{1}{2}m_\sigma^2\sigma^2 - \frac{1}{2}\Omega_{\mu\nu}\Omega^{\mu\nu} + \frac{1}{2}m_\omega^2\omega_\mu\omega^\mu \\ &-\frac{1}{4}\vec{\mathbf{R}}_{\mu\nu}\vec{\mathbf{R}}^{\mu\nu} + \frac{1}{2}m_\rho^2\vec{\rho}_\mu.\vec{\rho}^\mu - \frac{1}{4}\mathbf{F}_{\mu\nu}\mathbf{F}^{\mu\nu} \\ &-g_\sigma\overline{\psi}\psi\sigma - g_\omega\overline{\psi}\gamma^\mu\psi\omega_\mu - g_\rho\overline{\psi}\vec{\tau}\gamma^\mu\psi.\vec{\rho}_\mu \\ &-e\overline{\psi}\gamma^\mu\psi A_\mu, \qquad (2)\end{aligned}$$

where the first term represent the Lagrangian of free nucleons. m_σ, m_ω, m_ρ represents the masses of σ, ω, and ρ mesons with corresponding coupling constants g_σ, g_ω, g_ρ for the mesons to the nucleons, respectively. $\Omega_{\mu\nu}$, $\vec{R}_{\mu\nu}$, $F_{\mu\nu}$ are field tensor of the vector fields ω, ρ, and the photon. The coupling of σ field and ω field to the nucleon field reads

$$g_i(\rho) = g_i(\rho_{sat})f_i(x) \qquad \text{for} \quad i = \sigma, \omega \quad (3)$$

with

$$f_i(x) = a_i\frac{1 + b_i(x + d_i)^2}{1 + c_i(x + d_i)^2}, \qquad (4)$$

with $x = \rho/\rho_{sat}$. Here, ρ_{sat} ($=0.152 fm^{-3}$) is the baryon density at saturation in symmetric nuclear matter.
For density dependence of ρ-meson coupling is given by

$$g_\rho(\rho) = g_\rho(\rho_{sat})e^{-a_\rho(x-1)} \qquad (5)$$

This model is represented in the present investigations by the parameter set DD-ME2 [2].

The inclusion of pairing correlations is significant for the description of open-shell nuclei quantitatively. A separable pairing interaction has been used in the present investigation. The details about pairing interaction can be found in Ref. [3]. The present calculations have been performed by using DIRHB code developed by Niksic and others [4].

*Electronic address: pankajdhiman659@gmail.com

Reduction of $N = 28$ shell gap in light neutron-rich nuclei

Pankaj Kumar[1],* Virender Thakur[1], Vikesh Kumar[1], Smriti Thakur[1], Anupriya Sharma[1], Raj Kumar[1], and Shashi K. Dhiman[1]
[1]*Department of Physics, Himachal Pradesh University, Summerhill, Shimla-171005, INDIA*

Introduction

The nuclei in the vicinity of closed shells are generally stable and spherical. The magic number $N = 28$ originates from spin-orbit (SO) coupling in the atomic nuclei. This SO interaction lowers the $f_{7/2}$ orbital into middle of gap between *sd* and *fp* shells, resulting in the magic number between $f_{7/2}$ and $p_{3/2}$ orbitals [1]. The existence or disappearance of a shell closure is possibly linked to the evolution of SO force. The reduction of SO interaction and hence shell gaps would occur for neutron-rich nuclei with increasing in surface diffuseness. The erosion of $N = 28$ shell closure has been studied both theoretically and experimentally and is an interesting topic in nuclear physics.

Theoretical Framework

The Lagrangian density for point-coupling model can be written as [2]

$$\begin{aligned}\mathcal{L} \;=\; & \overline{\psi}(i\gamma.\partial - m)\psi - \frac{1}{2}\alpha_S(\rho)(\overline{\psi}\psi)(\overline{\psi}\psi) \\ & -\frac{1}{2}\alpha_V(\rho)(\overline{\psi}\gamma^\mu\psi)(\overline{\psi}\gamma_\mu\psi) \\ & -\frac{1}{2}\alpha_{TV}(\rho)(\overline{\psi}\vec{\tau}\gamma^\mu\psi)(\overline{\psi}\vec{\tau}\gamma_\mu\psi) \\ & -\frac{1}{2}\delta_S(\partial_\nu\overline{\psi}\psi)(\partial^\nu\overline{\psi}\psi) - e\overline{\psi}\gamma.\mathbf{A}\frac{1-\tau_3}{2}\psi,\end{aligned}$$

where m is the mass of nucleon, α_S, α_V and α_{TV} represent the coupling constants for four-fermion contact terms. The microscopic density-dependent scalar and vector self-energies are computed by using following functional form of the couplings.

$$\alpha_i(\rho) = a_i + (b_i + c_i x)e^{-d_i x}, \qquad (i = S, V, TV) \tag{1}$$

where $x = \rho/\rho_{sat}$ denotes the nucleon density in symmetric nuclear matter at saturation point ρ_{sat}. The parameters involved in point coupling CDFT model are given in Ref. [2].

It is necessary to consider pairing correlations for a quantitative description of open-shell nuclei. A separable pairing interaction has been used in the present investigation. The details about pairing interaction can be found in Ref. [3]. The calculations are performed by imposing constraints on the axial and triaxial mass quadrupole moments [4].

Results and Discussion

The evolution of proton and neutron single-particle energies are necessary to understand the role of nuclear forces involved around $N = 28$ magic shell. The middle panel of Fig. 1 shows the binding energies of the neutron states located just above and just below the $N = 28$ shell closure. The difference of the binding energy of the two states, surrounding the gaps at $N = 28$ shell closure, is shown in the upper panel of Fig. 1. A reduction of $N = 28$ spherical shell gap has been observed clearly towards the neutron-rich side. ^{48}Ca exhibits a large shell gap between occupied and valance orbits around Fermi level that prevent any excitation and lead to a spherical shape. The mixing between f and p states may result in the reduction of the spherical shell gap. Thus, the nucleus may get deformed. This change of structural behavior can partly be ascribed to the evolution of proton single-particle energies. The lower panel of Fig. 1 shows the shell structure of $1d_{5/2}$, $2s_{1/2}$, and $1d_{3/2}$ orbits as a function of proton number. The energy spacing between $\pi d_{3/2}$ and $\pi s_{1/2}$ orbitals

*Electronic address: pankajdhiman659@gmail.com

The study of nuclear structure properties of neutron-rich even-even $^{200-216}$Hg isotopes

Vikesh Kumar[1],* Pankaj Kumar[1], Virender Thakur[1], Smriti Thakur[1], Anupriya Sharma[1], Raj Kumar[1], and Shashi K Dhiman[1]
[1]*Himachal Pradesh University, Shimla, Himachal Pradesh - 171005 INDIA*

Introduction

The experimental and theoretical studies of exotic nuclei having a large number of neutron or protons are the most operational areas of research. The most prominent part in the enhancement of our understanding of nuclear physics away from the β-stability line goes to the radioactive ion beam (RIB) facilities and sensitive detection technologies. In the pursuit of a better understanding of the atomic nuclear structure, physicists observed a variety of nuclear shapes and structural phenomena. The study of nuclear shape evolution in an atomic nucleus is one of the fundamental quests in nuclear physics. As the number of nucleons increases after the shell closure, the additional nucleons create the polarizing effect that raises the deformation. These studies aim to address all these properties, which are: potential energy curves, binding energy per nucleon, charge radius, and neutron skin thickness.

Theoretical Framework

Self-consistent mean-field (SCMF) models provide a very successful tool to study and analyze a variety of nuclear structure properties throughout the entire nuclear chart. The Lagrangian of density-dependent point-coupling models contains isoscalar-scalar, isoscalar-vector, and isovector-vector four-fermion contact interactions in the isospace-space and is as follows.

$$\begin{aligned}\mathcal{L} &= \overline{\psi}(i\gamma.\partial - m)\psi - \frac{1}{2}\alpha_S(\rho)(\overline{\psi}\psi)(\overline{\psi}\psi) \\ &-\frac{1}{2}\alpha_V(\rho)(\overline{\psi}\gamma^\mu\psi)(\overline{\psi}\gamma_\mu\psi) \\ &-\frac{1}{2}\alpha_{TV}(\rho)(\overline{\psi}\vec{\tau}\gamma^\mu\psi)(\overline{\psi}\vec{\tau}\gamma_\mu\psi) \\ &-\frac{1}{2}\delta_S(\partial_\nu\overline{\psi}\psi)(\partial^\nu\overline{\psi}\psi) - e\overline{\psi}\gamma.\mathbf{A}\frac{1-\tau_3}{2}\end{aligned} \quad (1)$$

The Energy Density Functional of the point-coupling models is as follows.

$$\begin{aligned}\mathcal{E}_{RMF}[\psi,\overline{\psi},A_\mu] &= \int d^3r\mathcal{H}(r) \\ = \sum_{i=1}^{A}\int d^3r\psi_i^\dagger(\boldsymbol{\alpha}\mathbf{p}+\beta m)\psi_i - \tfrac{1}{2}(\boldsymbol{\nabla}A)^2 \\ +\tfrac{1}{2}e\int d^3r j_p^\mu A_\mu + \tfrac{1}{2}\int d^3r\big[\alpha_S\rho_s^2 + \alpha_V j_\mu j^\mu \\ +\alpha_{TV}\overrightarrow{j}_\mu\overrightarrow{j}^\mu + \delta_S\rho_s\Box\rho_s\big].\end{aligned} \quad (2)$$

Results and Discussions

In this section, we have provided the potential energy curves for even-even neutron-rich Mercurry isotopes. The comparative analysis between the experimental and theoretical studies is also present in this section.

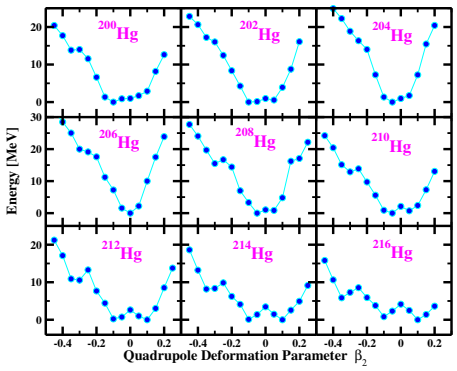


FIG. 1: The potential energy curves as a function of quadrupole deformation parameter β_2 for even-even $^{200-216}$Hg.

*Electronic address: vickyrao955@gmail.com

Microscopic study of Binding Energies in Odd-Mass Exotic Isotopes within RHB and HFB Formalism

Virender Thakur,* Pankaj Kumar, Vikesh Kumar,
Smriti Thakur, Raj Kumar, and Shashi K Dhiman†
Department of Physics, Himachal Pradesh University, Summer-Hill, Shimla-171005, INDIA

Introduction

The physics of exotic nuclei is one of the most interesting and developing subjects in nuclear physics. The technical advancements in the available experimental facilities have made possible the study of the wide range of the nculides of the periodic table. The properties of exotic nuclei on the edge of existence play a fundamental role in our understanding of various nuclear properties and interactions. Exotic nuclei are characterized, in most cases by unbalanced ratio between the proton number (Z) and neutron number (N). Till now, we do not know much about most of the nuclei which exists and specially Odd-Mass nuclei as it is tedious task to study these nuclei due to breaking of the time reversal symmetry. We have made an attempt to investigate the ground state binding energies of the chain of Odd-Mass isotopes in Silicon and Sulphur. Ground state binding energy, and thus the mass of nucleus, is one of the characteristic properties, reflecting deep information of the nuclear structure which has applications in medicine, energy generation, and nuclear astrophysics. We present our theoretical results of ground state binding energies(B.E.) of Odd-A (A is mass number) nuclides of $^{23-43}$Si and $^{27-47}$S isotopes.

Method

The presented work has been done by using the models based on Hartree-Fock-Bogoliubov and Relativistic Hartee Bogoliubov (RHB) Theories. A brief discussion of these models is given below.

A. HFB Theory

This theory is a combination of Hartree-Fock (HF) and BCS theory. Details of the theory can be extracted from ref. [1, 2] based on the zero range Skyrme effective interactions [3] used in the mean field part.

B. RHB Theory

The total Lagrangian density of mesons exchange approximation (DD-ME2 parameterization) involving the isoscalar scalar σ meson, the isoscalar vector ω meson, and the isovector vector ρ meson can be written as [4],

$$\begin{aligned}\mathcal{L} = \sum_i \overline{\psi_i}(i\gamma_\mu\partial^\mu - m)\psi_i + \frac{1}{2}\partial_\mu\sigma\partial^\mu\sigma \\ -\frac{1}{2}m_\sigma^2\sigma^2 - \frac{1}{2}\Omega_{\mu\nu}\Omega^{\mu\nu} + \frac{1}{2}m_\omega^2\omega_\mu\omega^\mu \\ -\frac{1}{4}\vec{R}_{\mu\nu}\vec{R}^{\mu\nu} + \frac{1}{2}m_\rho^2\vec{\rho}_\mu.\vec{\rho}^\mu - \frac{1}{4}F_{\mu\nu}F^{\mu\nu} \\ -g_\sigma\overline{\psi}\psi\sigma - g_\omega\overline{\psi}\gamma^\mu\psi\omega_\mu \\ -g_\rho\overline{\psi}\vec{\tau}\gamma^\mu\psi.\vec{\rho}_\mu - e\overline{\psi}\gamma^\mu\psi A_\mu \quad (1)\end{aligned}$$

Where, first term represents the Lagrangian of free nucleons with bare mass m and, $\overline{\psi}$ defines its Dirac spinors.

Result and Discussion

We present our results for Binding Energies for the Odd-Mass isotopic chains of Si and S nuclides. HFB Calculations are carried out for different skyrme parameterizations by using the HFB code [5] with harmonic oscillator basis and SLY5 parameterization [6]. RHB calculations are computed with DIRHB code [7] and DD-ME2 parameterization [4]. Binding

*Electronic address: virenthakur2154@gmail.com
†Electronic address: shashi.dhiman@gmail.com

Single-neutron and Two-neutron Separation energies in Odd-A nuclides of Ar and Ca

Virender Thakur,* Pankaj Kumar, Vikesh Kumar,
Smriti Thakur, Raj Kumar, and Shashi K Dhiman†
Department of Physics, Himachal Pradesh University, Summer-Hill, Shimla-171005, INDIA

Introduction

The study of nuclear structure properties of the nuclides is always a challenging task in nuclear physics as the nuclear chart is not fully explored experimentally. Complexity of many body problem makes the task even more difficult. Theoretical models can serve better this purpose. The models available to study nuclei are best suited for the even-even system of nuclei only [1, 2]. Here in this work, we have made an attempt to study the Odd-A (A is mass number of respective nuclei) nuclides and we have selected Odd-A Ar and Ca isotopes for our purpose as a lot of crucial experimental information [5] is availabe for these nuclides. We present our theoretical results of single-neutron separation energies S_n and two-neutron separation energies S_{2n} for isotopes these nuclides. The theoretically computed results with DD-PC1 [3] and DD-PCX [4] parameterization of Relativistic-Hartree-Bogoliubov Nuclear Density Functional are reasonably reproducing the recently available experimental [5] extractions.

Theoretical Framework

This work has been done by using Relativistic-Hartee-Bogoliubov (RHB) Theory [6, 7] with DD-PC1 [3] and DD-PCX [4] parameterizations. A brief discussion of this models is given below.

*Electronic address: virenthakur2154@gmail.com
†Electronic address: shashi.dhiman@gmail.com

1. DD-PC Model

In RMF phenemenology, Lagrangian density of point coupling models including the isoscalar-scalar $(\overline{\psi}\psi)^2$, isoscalar-vector $(\overline{\psi}\gamma_\mu\psi)(\overline{\psi}\gamma^\mu\psi)$, and isovector-vector $(\overline{\psi}\vec{\tau}\gamma_\mu\psi).(\overline{\psi}\vec{\tau}\gamma^\mu\psi)$ four-fermion contact interactions in the isospace-space can be written as [3],

$$\begin{aligned}\mathcal{L} = \overline{\psi}(i\gamma.\partial - m)\psi - \frac{1}{2}\alpha_S(\rho)(\overline{\psi}\psi)(\overline{\psi}\psi) \\ -\frac{1}{2}\alpha_V(\rho)(\overline{\psi}\gamma^\mu\psi)(\overline{\psi}\gamma_\mu\psi) \\ -\frac{1}{2}\alpha_{TV}(\rho)(\overline{\psi}\vec{\tau}\gamma^\mu\psi)(\overline{\psi}\vec{\tau}\gamma_\mu\psi) \\ -\frac{1}{2}\delta_S(\partial_\nu\overline{\psi}\psi)(\partial^\nu\overline{\psi}\psi) - e\overline{\psi}\gamma.A\frac{1-\tau_3}{2}\psi. \quad (1)\end{aligned}$$

Result and Discussion

The quantity $S_n(\mathrm{Z}, N)$ known as single-neutron separation energy is defined as

$$S_n(Z, A) = B(Z, N) - B(Z, N-1) \quad (2)$$

where $B(Z, N)$ represents the binding energy of the nuclei with atomic number Z and neutron number N. Whereas the two-neutron separation energy is defined as the energy required to remove two neutrons from a nucleus. It is calculated by using the formula,

$$S_{2n}(Z, N) = B(Z, N) - B(Z, N-2) \quad (3)$$

We have calculated theoretically the results of S_n(Z,N) and S_{2n}(Z,N) for Odd-A isotopes of Ar and Ca with the help of binding energies B(Z,N) and B(Z,N-2). Comparison of theoretical results with the experimental data [5] is also done in our studies. These results along with the experimental data are shown in Figures 1 and 2. Figure 1, presents results of

A study of shape transition and bubbleness in Ne isotopes

Pankaj Kumar[1,*], Virender Thakur[1], Shashi K. Dhiman[1]

[1] *Department of Physics, Himachal Pradesh University, Summerhill, Shimla-171005, India*

Abstract We have studied shape transition and development of quadrupole deformation in even-even $^{18-36}$Ne isotopes by employing covariant density functional theory (CDFT) with density-dependent meson exchange (DD-ME2) and density-dependent point coupling (DD-PC1) parameter sets. A sudden shape transition is observed in the Ne isotopic chain and can be related to the evolution of shell structure of single-particle orbitals. The correlations between shape transition and discontinuities in other physical observables are also examined. Our results for ground-state properties are in good agreement with the available experimental data and the result of various theoretical models. The present calculations infer the neutron drip line at ^{34}Ne. In addition to shape transition, the bubble structure is also studied for magic nuclei in this chain.

Keywords Covariant density functional, Shape coexistence, Charge radii, Bubble structure

INTRODUCTION

The development of accelerator techniques and sensitive detection technologies for Radioactive Ion Beams provide the possibility of studying the structural properties of nuclei away from the stability line. The nuclei in the light-mass region are of particular interest. These nuclei are at the center of the island of inversion. The evolution of nuclear shapes in various isotopic and isotonic chains has been investigated consistently by various theoretical and experimental techniques. The phenomena of shape coexistence and triaxial deformation were studied for some light nuclei [1,2]. However, the effect of triaxiality was found to be marginal on the mean-field part of binding energy. A halo structure of ^{31}Ne was reported experimentally using one proton removal reaction [3]. A recent experimental investigation suggests ^{34}Ne as the heaviest bound nucleus in Ne isotopic chain [4]. In a recent study, the N = 14 sub-shell closure was reported for charge radii measurement of neon isotopes. Their computations were based on nucleon-nucleon and three-nucleon potentials from chiral effective field theory [5].

Nuclear density functional theories (DFT) have been used to understand nuclear many-body dynamics for an appreciable description of nuclei near the drip line. Covariant density functional theory (CDFT) is one of the most attractive nuclear density functional theories and has achieved great success in the description of ground- and excited-state properties of both spherical and deformed nuclei throughout the nuclear chart [6-9]. In this work, a systematic study of shape transition and ground state properties of neon isotopes has been done using CDFT with DD-ME2 [10] and DD-PC1 [11] parameter sets with a separable pairing interaction [12,13]. The calculations were performed within an axially symmetric deformed configuration.

THEORETICAL FRAMEWORK

Self-consistent mean-field (SCMF) models provide a very successful tool to study a variety of nuclear structure phenomena throughout the segre chart. These models are based on nuclear energy

* Corresponding author, email: pankajdhiman659@gmail.com

J. Nucl. Phys. Mat. Sci. Rad. A. Vol. 9, No. 1 (2021), pp.19–23

Journal of Nuclear Physics, Material Sciences, Radiation and Applications
Journal homepage: https://jnp.chitkara.edu.in/

Impact of Nuclear Deformation on Neutron Dripline Prediction: A Study of Mg Isotopes

Pankaj Kumar*, Virender Thakur and Shashi K. Dhiman

Himachal Pradesh University, Shimla, Himachal Pradesh-171005, India

*pankajdhiman659@gmail.com (Corresponding Author)

ARTICLE INFORMATION

Received: February 5, 2021
Accepted: April 15, 2021
Published Online: August 31, 2021

Keywords:
Relativistic Hartree-Bogoliubov, Quadrupole deformation, Shape coexistence, Dripline nuclei

DOI: 10.15415/jnp.2021.91004

ABSTRACT

We have employed the relativistic Hartree-Bogoliubov (RHB) model with density-dependent meson-exchange interaction and separable pairing to investigate neutron dripline mechanisms for heavy Mg isotopes. In the present study, ^{40}Mg is predicted to be dripline nuclei. The calculations are carried out by taking axial deformation into account. An investigation of shape transition is also done for even-even $^{32\text{-}42}$Mg isotopes. Our prediction for neutron dripline for ^{40}Mg is consistent with some recent studies.

1. Introduction

The study of nuclei far from β-stability line is a devoted part of modern nuclear-structure studies. The limit of nuclear existence is reached while going away from the stability line. Nuclear drip lines form the edges of the nuclear chart and are defined as limits beyond which a single nucleon become unbound in the nuclear ground-state. The advancement in Radioactive Ion Beam (RIB) facilities and sensitive detection technologies have made it accessible to reach neutron drip lines experimentally. Although the construction of RIBs brings the goal closer, the nuclear drip lines have not been fully mapped experimentally. Moreover, the theoretical location of the nuclear drip line is uncertain [1, 2]. According to a recent study done by Tsunoda et al. [3], the mechanism responsible for the drip line is related to deformation. However, the neutrons can't be added continuously as the atomic nucleus is characterized by a specific number of protons and neutrons and is bounded by drip lines [4]. Earlier, it was assumed that the strong nuclear force for pn symmetry governed the neutron drip line. But protons and neutrons jump from shell to shell, as they do not stay in a single shell, and move collectively by forming different configurations. These configurations produce deformed shapes. Motivating from this idea, we have done a drip line study of Mg isotopes using relativistic Hartree-Bogoliubov (RHB) model with density-dependent meson exchange (DD-ME2) interaction. Our results for ground-state properties and drip line prediction are consistent with recent theoretical studies. For Mg isotopes, different predictions for neutron drip lines have been proposed. According to the study done in Refs. [5, 6], the heaviest magnesium isotope observed is ^{40}Mg while, the dripline is predicted at ^{42}Mg in some recent studies [3, 7].

Nuclear density functional theories have been using to understand nuclear many-body dynamics for an appreciable description of nuclei near the drip lines [8-11]. It is also found to provide appreciable results for the shape of the nuclei. For the calculations of the shape evolution and ground-state properties, we have used the DIRHBZ numerical code developed by Niksic and others [12]. The present calculations infer the neutron drip line for ^{40}Mg.

2. Theoretical Framework

Self-consistent mean-field (SCMF) models provide a very successful tool to study nuclear ground-state and excited-state properties from the valley of β-stability to the nuclear drip-lines throughout the Segre chart (nuclear chart). These models are based on the nuclear energy density functionals (EDF) in which the nucleons are treated as independent particles moving inside the nucleus under the influence of potentials that are derived from such functionals [13].

ISSN No.: 2321-8649(Print) ISSN No.: 2321-9289(Online); Registration No. : CHAENG/2013/51628

International Journal of Innovative Research and Advanced Studies (IJIRAS)
Volume 8 Issue 11, November 2021

ISSN: 2394-4404

Self-Help-Groups Playing Transformative Role In The Women Empowerment In India

Vidya Sharma

Assistant professor Commerce, Govt. College Panarsa, Mandi

Prof. Sumeet Thakur

Assistant professor Political Science, Govt. College Panarsa, Mandi

Abstract: ***Self-Help-Groups has become the important institution for the rural transformation and gender empowerment. They have become one of the basic institutions at the grassroots to empower people especially women. Now government is looking to harness their collect strength to achieve tasks like financial inclusion and livelihood promotions with them. Deen Dayal Upadhyaya Antyodaya Yojan has become the flagship programme to provide these Self-Help – Groups with new vision and strength to fulfil the task of empowerment of women.***

I. INDRODUCTION

Mary Parker Follet was the first modern managerial thinkers which stressed on the importance of Group functioning. She advocated the principle of 'integration' and non-forceful power-sharing. This is based on "power with" paradigm rather than 'power-over.' She exhorted participatory management, decentralized decision-making, integration role of groups and humanistic approach to management. We think that the modern Self-Help Groups are based on the same philosophy of harnessing the potential of the group. Self -Help Groups are based on the philosophy of collective management which is 'power with' in its design rather than being on bureaucratic conception of 'power over'.

Self- Help-Groups (SHGs) has been playing a very transformative role in financial empowerment of especially woman and rural sector. During colonial rule and in the initially decades after independence banking sector and other financial institutions could not reach at the grassroots. Despite Indira Gandhi's efforts of Bank Nationalization, Lead Bank Approach and subsequent Priority Sector Landing its impact could not be felt at the lives of deserving people. Creation of Regional Rural Banks and even the NABARD could not create a reach within rural folks. Self Help Groups has focussed on the group which is consist of women of the villages and helps them by providing credit and loan for the livelihood generation. This is also help in generating group capability among these women to perform diverse tasks. They can also be trained to work with Integrated Child Development Scheme, Primary Education Department, Forest department and Health department (creation of sanitary napkins, contraceptives and other hygiene related issues) for providing further outreach for their missions and schemes. Self-help groups can play a very essential role in organizing people into small productive groups. Self-help groups (SHGs) has now attained the status of basic unit for microfinancing in India. Usually women of similar socio-economic backgrounds are organized into (SHGs) self-help groups. This naturally helps in setting a collective target of saving small amount of money to create larger amount which help them in future in further landing and borrowings. Self-help groups can also help in skilling and transforming people. Traditionally person with low and unstable income background used to find it very difficult to get credit. Self-help Groups in their collective strengthen has more capacity to borrow from financial institutions. The collective ethos of the group also works as a force in keeping every member punctual & sincere in their financial responsibilities towards the group.

II. BANK SUPPORT TO SHGS TO BOOST FINANCIAL INCLUSION

In 1990s policy makers decided to promote SHGs for further increasing the access of the rural poor to institutional finance. This task was essential to fulfill the task of poverty

PRINT: ISSN 0976-6901 ONLINE: ISSN 2456-6543

J Biodiversity, 12(1-2): 1-12 (2021)
DOI: 10.1080/09766901.2021/12.1-2.103

Temporal Changes in Tree Species Composition in Karsog Area of Northwest Himalaya

Harish Bharti*, Pankaj Sharma, Kiran Lata, Abhay Mahajan, Ritesh Kumar, Priyanka Sharma and S. S. Randhawa

Himachal Pradesh Centre on Climate Change (HPCCC), Himachal Pradesh Council for Science Technology and Environment (HIMCOSTE), Vigyan Bhawan Bemloe, Shimla 171 001, Himachal Pradesh, India

KEYWORDS Altitudinal Gradient. Community. Density. Species. Temporal Change

ABSTRACT The forests of Karsog Forest Division in Himachal Pradesh were temporally analyzed for change in tree species composition. These are based on the species composition in different communities and variations along the different altitudinal gradients. The enumeration records were procured from the forest department. Total 143 forest compartments were analyzed to study the change in tree species in thirteen delineated communities, out of which six were pure forest communities and seven were mixed forest communities. The change in density (Ind/ha) in tree species was calculated between two enumeration years, that is 1986 and 2013. Results showed that out of thirteen communities, only three pure communities viz., *Pinus roxburghii, Abies pindrow* and *Quercus leucotrichophora* showed increased density while other pure communities showed decreased density in two enumeration years. Altitudinal based study revealed that the lowest altitudinal gradient (1000-2000 m) showed increase in tree density while in 2000-3000 m zone a gradual fall in tree density was observed temporally.

INTRODUCTION

India is one of the biodiversity rich countries where the forests cover is about 7,08,273 sq km, or 21.54 percent of the country (ISFR 2017). The forest productivity in Indian forests is roughly one tenth of its potential which is due to the growing biotic pressure and inadequate resources for scientific forest management (FAO Report 1997). In the past few decades, a decline in the forest area had sought attention because of the environment impact observed at local, regional and global scales (Cabrera and Vilatta 2013). Thus, reduction in the size of the forests and significant changes in the pattern of the natural landscapes have led to the global climate change (Dale 1997; Watson et al. 2000; Leuzinger et al. 2011; Abdalla et al. 2013). The diversity of tree species is fundamental to total forest biodiversity, because trees provide resources and habitats for almost all other forest species (Huston 1994).

The forests of Himachal Pradesh known for their grandeur and majesty are like a green pearl in the Himalayan crown. Himachal's most important and most voluminous, biological resource is its forest wealth. The forests of Himachal Pradesh play a vital role in the unique Western Himalayan ecosystem by conserving the integrity of the upper watersheds of five major Indian rivers (Chenab, Ravi, Beas, Sutlej and Yamuna), sustaining the agro-pastoral livelihoods of hill peoples and balancing the economy of this small hill state. Out of a total area of 55,673 sq. km. the forests are legally classified into reserved forests (5.12%), demarcated protected forests (30.75%), un-demarcated protected forests (58.48%), unclassed forests (2.63 %), and other forests (3.02%) (H.P. Forest Department).

The wide range of altitudes and climatic conditions in the state sustain a variety of forest types including moist tropical, dry tropical, montane subtropical, montane temperate, sub- alpine and alpine scrub. In general, these categories represent decreasing departmental control and an increase of local rights within them. The richness and diversity of our flora can be gauged from the fact that, out of total 45,000 species found in the country as many as 3,295 species (7.32%) are reported in the State (Chowdhery and Wadhawa 1984). The forests of Himachal Pradesh are rich in vascular flora, which forms

* *Address for correspondence:*
Mobile: +918894376140, +917018630489
E-mail: harishbharti733@gmail.com

I2OR Impact Factor : 3.015

ISSN : 2395 - 5104

शब्दार्णव Shabdarnav

International Peer Reviewed Refereed Journal of Multidisciplinary Research

Year 7 Vol. 13, Part-IV January-June, 2021

Scientific Research
Educational Research
Technological Research
Literary Research
Behavioral Research

Published by
SAMNVAY FOUNDATION
Mujaffarpur, Bihar

- [illegible] : भारतीय संस्कृति का मूल्य
  [illegible] कुमार मुरलन
- भारतीय संस्कृति
  [illegible]
- [illegible] की मूलधारा
  [illegible]
- भारतीय सामाजिक संरचना में [illegible] : ऐतिहासिक
  [illegible]
- [illegible] के उपन्यासों में सामाजिक संरचना
  [illegible]
- उपन्यास के शिल्पकारों में सामाजिक व राजनीतिक चेत
  का विकास अतीत एवं वर्तमान
  [illegible]
- समकालीन कवि स्वप्निल श्रीवास्तव : काल विशिष्ट
  [illegible]
- [illegible] को अभिव्यक्त करता आलावाद
  [illegible]
- [illegible] सामाजिक विचारकों की आवश्यकताओं की प्रकृति संतुष्टि
  सामाजिक भूमिका के प्रभाव का अध्ययन
  [illegible]
- अश्वघोष का बौद्ध दर्शन में योगदान
  [illegible]
- नीतिशास्त्रानुशासन में पुरुषार्थ (त्रिवर्ग)
  [illegible]
- "बुद्धचरित" में वर्णित [illegible]
  [illegible]
- संस्कृत महाकाव्य की परम्परा में अश्वघोष कृत [illegible]
  एक विहंगावलोकन
  [illegible]
- भारत [illegible]
  [illegible]

International Journal of Arts, Humanities and Social Studies
Website: https://www.ijahss.in/
ISSN(*Online*): 2582-3647
Volume 3; Issue 6; Nov-Dec 2021; Page No. 225-230
Open Access
Original Paper

Gender of *Mohrā* : A Study of faces of deity in Banjar region of Kullu in Himachal Pradesh

Reena[1*] ; Anjali Verma[1]
[1]Research scholar, Department of History, Himachal Pradesh University, Summer Hill, Shimla

ABSTRACT
Kullu region in western Himalayas has remained a place of curiosity, imagination and full of narratives due to several factors which are unique in its culture and religion. Its strange rituals, gods and goddesses, traditions remained a field of vast research since long time. *Mohra* that depicts the face of gods, goddesses, rishis and demons has equally generated curiosity amongst researchers where study done by AlkaHingorani presented a strong case of explorations we need to do on *Mohras*. Hence, this field survey was conducted in Banjar region to see the *mohras* lying in various temples of the region. The study tries to explore the depiction of gender and age in *mohras* along with indigenous elements present in its formative features. The study concludes with the observation that all these faces of gods, goddesses, rishis and demons are not only depiction of age and gender but also involves some level of creativity of workman who was assigned the job of make it. Their workshops where these *mohras* are being made form the basic center of this depiction.

Keywords: *Kullu, Banjar, Mohra, gender, western Himalayas.*
***Citation*:** Reena & Anjali Verma (2021). Gender of Mohrā : A Study of faces of deity in Banjar region of Kullu in Himachal Pradesh. *International Journal of Arts, Humanities and Social Studies*, 3(6), 225-230.

INTRODUCTION

Present research deals with the study of the *mohrā* which is a unique feature of religious identification of deity in Banjar area of Kullu. The *mohrā* is a facial impression of male and female deities, *ṛīṣī* and demigods. Though done at smaller level of covering the study of twenty faces of various devīs and devtās of region, but it tries to throw light on lesser worked issue of depiction of age, sex or even racial expressions of devīs and devtās, *ṛīṣī* and demigods.

Metal mask are called *mohrās* in Himachal Pradesh, notwithstanding the fact that physically and technically they never were intended to serve as facial masks as imaged by some scholars. Most of them were small and, none were provided with apertures for the eyes and breathing. Moreover, since in the most cases, the upper part of the torso was depicted, the label mask has definitely to be discarded and replaced by a more accurate term such as 'bust' which better suits both their morphology and function. However, as the term 'bust' might also give rise to some confusion, *mohrās*, which in Hindī, and in the pahārī dialect means a mask but is applied specifically to these busts.

Most of the *mohrās* of Kullu that adorn a palanquin and represent various regional deities are embossed on the sheets of gold or silver. Of all the *mohrās* on a *pālakī*(palanquin), one is placed in central position, and that *mohrā* is the most important representation of the deity i.e.,*malimukha*. A *malimukha* may be embossed, but, more often than not. It is casted from an alloy of eight main elements, called *aṣtadhātumohrā*. In these *mohrās*, include traces of precious metals such as gold and silver[1]. Large quantities of gold, silver, and *aṣtadhātumohrā* have been discovered in the Kullu region. It was a few decades ago that the art market started spreading on smaller levels. Bronze was mixed in brass and a long beaming face was formed, with much similarity of the face like the people living in this area[2]. These deities are present in chariots of gold and silver and bronze, I came across during my field visit in the Banjar region from June-October, 2020.

Process of casting the mohrās

During the survey of the area, I interviewed the workman of *mohrās* Shri Labe Singh, Sohni village of Balichowki. He told that for gold, silver or bronze *mohrā*, casting process remains same. Casting structures are already there, it is just the molten metal that is poured inside cast. The economic reason affects the size of seals and *mohrā*. Shri Labe Singh told that when the main mohrā of devtā is made, several precautions are taken. Before starting of mohrā, the deity whose mohrā is to be casted, need to be asked for permission through his/her messenger called Gur. After permission, the work of its casting begins. *Mohrā* is generally made in the night. If time is not auspicious, then *mohrā* has to be made from 3:00 am when the casting and molding of the *mohrā* starts. The person who is casting and making the *mohrā* has to follow fasting until it is finally furnished[3]. The first *mohrā* is made of clay, after which art is made with wax in it. Wax

South Asian History, Culture and Archaeology

Vol. 3, No. 1, 2023, pp. 1-15

URL: http://www.esijournals.com

Influence of Gender and Caste on Dev Samaj of Banjar Region in Kullu in Himachal Pradesh

Reena[1] & Anjali Verma[2]

[1]Research Scholar, Department of History, Himachal Pradesh University, Summer Hill, Shimla. E-mail: [illegible]

[2]Assistant Professor, Department of History, Himachal Pradesh University, Shimla-171005

Abstract: The territorial extent of deities in western Himalayan region has remained a subject of deep enquiry. The subject still holds scholars' interest owing to the further extension of their thought in to religious notion of people of Kullu region with respect to caste and gender prevailing in dev-samaj. Present study is an attempt to see caste and gender involvement in dev-samaj of Banjar region of Kullu. This article traces the involvement of these two factors from temple management to [illegible] system of deities in the backdrop of present changes taking place in the life of villagers as followers. It also tries to enquire as to the involvement of lower [illegible] in age-old traditions of dev-samaj where women [illegible] a different set altogether in temple management.

Through this empirical study, it has been tried to develop an understanding of historic religious customs of dev-samaj through the prism of caste and gender involved in running the administration at various levels. It also highlights the lesser known facts of dev-samaj by [illegible] in religious culture of the area. This small/micro investigation of a western Himalayan region is an attempt to connect caste and gender developments at the religious sphere on pan-Indian lines which at parallel level highlighting the importance of integrating regional histories with south Asian history.

Key words: Caste, Dev-samaj, Gender, [illegible], Kullu, Western Himalaya

Received: 19 January 2023
Revised: 22 January 2023
Accepted: 17 February 2023
Published: 30 August 2023

TO CITE THIS ARTICLE

Reena & Anjali Verma (2023). Influence of Gender and Caste on Dev Samaj of Banjar Region in Kullu in Himachal Pradesh. South Asian History, Culture and Archaeology, 3: 1, pp. 1-15.

Introduction

Himachal Pradesh is divided into twelve administrative divisions, where Kullu is a major district of Himachal Pradesh. Kullu District of Himachal Pradesh is one of the culturally historic gems of the Himalaya. Kullu is divided in to four tehsils: Kullu, Manali, Banjar, and Nirmand. Amongst these four, the present study is focused mainly on Banjar region. Kullu region has deep-rooted tradition of Dev-

INTERNATIONAL JOURNAL OF
ENGINEERING RESEARCH
& MANAGEMENT TECHNOLOGY

Publication in IJERMT

www.ijermt.org

Lesser Known Edible Plants of Karsog Valley

*Vaneet Bharti and Pankaj Sharma

Introduction

Wild plants have been playing a very significant role in human life for thousands of years. They have been used for food, medicine, fiber, timber and also as feed for domestic animals. Wild edible plants serve as an alternative to staple food during periods of food scarcity and of course a potential source of nutrient supplements for rural communities. They have occupied a distinctive place as they are rich sources of minerals, vitamins and bioactive compounds (Sinha *et al* 2015; Nazary *et al* 2018).

In rural parts of India people traditionally harvest a wide range of leafy vegetables, roots, tubers, fruits from forests and uncultivated lands because of their unique taste, availability and as supplementary food during lean season (Jain 1989; Guinand and Lemmens 2003). Nutritional value of wild edible plants is comparatively less explored but considered as an important contributor for food security to rural people. According to the World Health Organization (WHO), 80% of the world's population still depends on traditional remedies for their medicines which have compounds derived from plants. The massive traditional knowledge of medicinal plants is presently playing a very essential role in the development of new drugs. Practices like Ayurveda, Homeopathy, Unani and Siddha use various species of medicinal plants that found their way a long time ago into the Hindu Material Medic (Kumar and Muthusubramani 2009). A large number of wild plant species as supplementary food has been reported in the "*Dictionary of Indian folklore medicine and Ethnobotany*" (Jain 1991). In recent years, due to the changing lifestyle and food habits of tribal households, particularly of the younger generation, many prefer modern, mainstream dishes ignoring coarse grains and replacing traditional plant-based diets (Lock *et al* 2005). In the changing context of climate, agricultural practices and consumption patterns, traditional knowledge is often ignored. High levels of anemia and ailments associated with nutrient deficiency were reported from tribal areas across the country (George and Christopher 2013).

Nearly 675 wild edible species have been observed from Indian Himalaya (Samant and Dhar 1997). The local communities depend on wild edible plants to meet their food requirements during periods of food shortage. The aim of the present study was to investigate the local uses of 35 lesser known edible plants

The Himalayan Bond: Ecocritical Perspectives in Ruskin Bond's Writings

[illegible]

Ruskin Bond, an icon among Indian English writers, commands an outstanding position in the field of Indian English writing. Well known as a short story writer, poet, writer of novellas and travelogues, he has made great contribution to the development of English literature in India, having authored six novellas, over five hundred short stories, thirty-five books for children, four volumes of autobiography, about five hundred newspaper articles, five collections of essays and four poetry collections so far. Winner of Sahitya Akademi Award and Padma Bhushan Award, he has written so extensively on the Himalayan region, its scintillating peaks, rivers, gorges, ravines, lakes & climate that his name has become synonymous with the Himalayas.

On the blurb of *Dust on the Mountain: Collected Stories by Ruskin Bond*, a quote from the *Tribune* says: "Ruskin Bond's stories bring to life the special flavours of life in the hills. He strengthens the 'Kiplyesque theory' that the smell of the Himalayas, if it once creeps into the blood of a man, he will return to the hills again and again and will love to live and die among them". His stories inspire love for the environment, and concern for its protection in the reader.

According to Peter Barry, an ecocritic might study a text from different perspectives, but his major concern is "to re-read major literary works from an eco-centric perspective, with particular attention to the representation of the natural world" (264). Bond's short stories show his insatiable love for nature, trees, the mountains and the flora and fauna of the Himalayas. Ecocriticism was a term coined in the late 1970s, joining the words "Ecology" and "Criticism". The concept is also known as Environmental Criticism and Green Studies. The term was introduced in the year 1978 by William Rueckert in his essay, "Literature and Ecology: An Experiment in Ecocriticism".

Ruskin Bond has been a tireless adventurer exploring the dark, unfathomed wilderness of the mountains. He has forged an enduring relationship with the Himalayas, frequently exploring their glaciers, ravines, forests and rivers. In fact, these various manifestations of nature are such an inalienable part of Bond's personality that he could not forget them even for a moment. The great Himalayan symbolises eternity, divine illumination, [illegible] and [illegible] accord with nature. In the Himalayas lies the real India. Giving a pen-portrait of the summits of the mighty Himalayas, Bond comments very aptly: "One of the

Materials Horizons: From Nature to Nanomaterials

Pankaj Sharma
Gagan Kumar Bhargava
Sumit Bhardwaj
Indu Sharma *Editors*

Engineered Ferrites and Their Applications

Springer

Biomedical Applications of Ferrites

Akshay Sharma, Ramesh C. Thakur ✉ & Renuka Sharma

Chapter | First Online: 04 June 2023

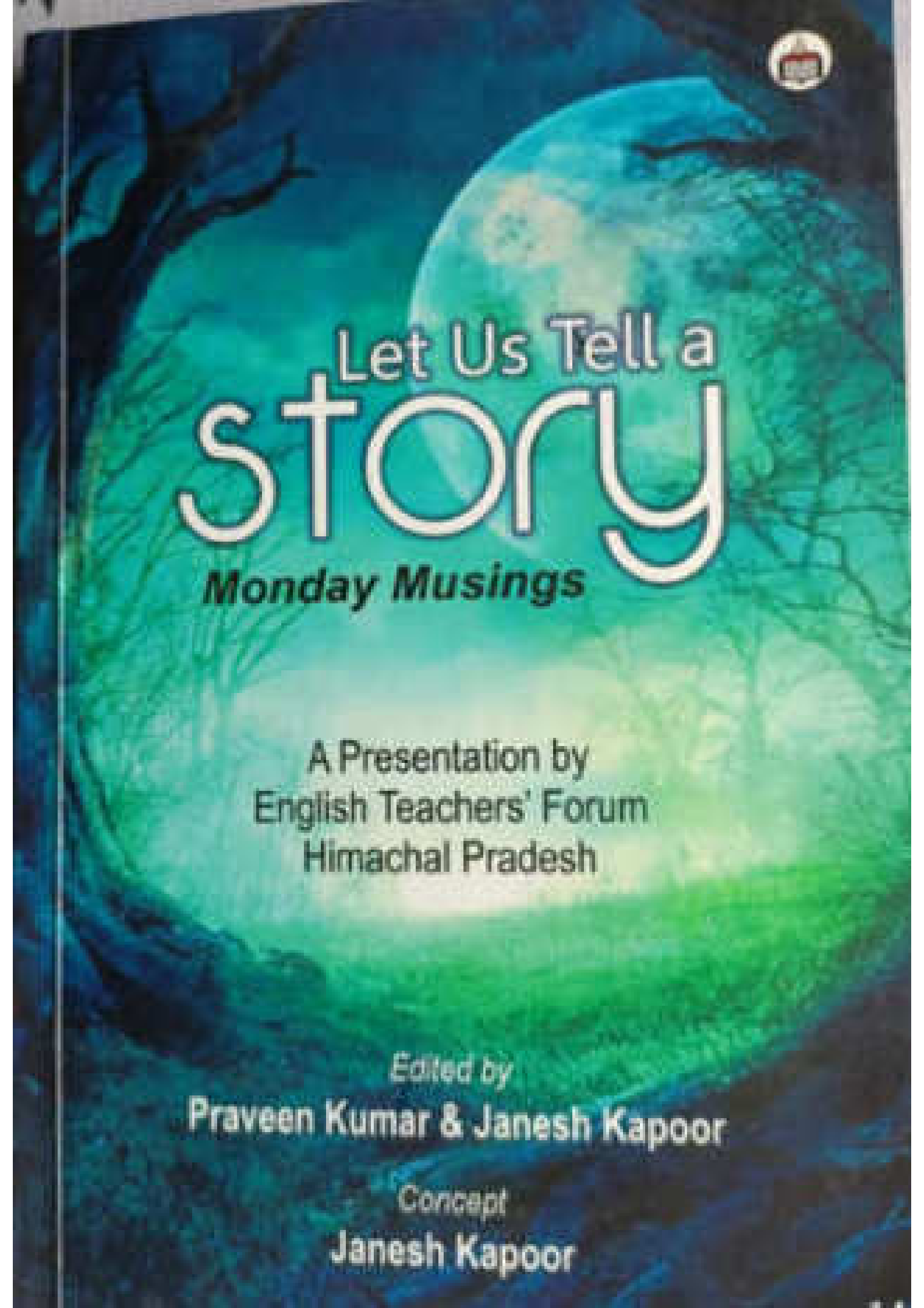
Part of the Materials Horizons: From Nature to Nanomaterials book series (MHFNN)

Abstract

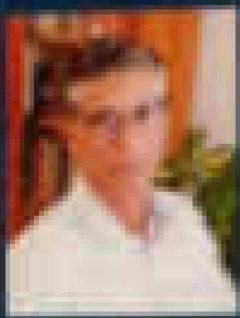
Ferrites have attracted a lot of attention in the last decade because of their numerous applications, particularly in the biomedical field where their improved magnetic characteristics are helpful for a variety of imaging, medical diagnosis, and available therapies. Ferrites' strong magnetic properties make them potential nanoagents for a number of applications, such as magnetic separation, targeted drug delivery, biosensors, MRI, nanorobots, and magnetic hyperthermia (MHT). In biomedical applications, nanoferrites' efficacy is influenced by their shape, chemical, and physical characteristics, and biocompatibility. In this chapter, an attempt is made to inform readers about various required characteristics as well as the most recent implementations of these traits that have been used effectively in the commercialized biomedical field. Additionally, we'll discuss current developments in engineered magnetic ferrite nanoparticles (MFNPs) for biomedical uses.

Keywords

Magnetic ferrite nanoparticles | Magnetic hyperthermia | Drug delivery | Biosensing


Let Us Tell a
story
Monday Musings
A Presentation by
English Teachers' Forum
Himachal Pradesh
Edited by
Praveen Kumar & Janesh Kapoor
Concept
Janesh Kapoor

Let Us Tell a Story is the germination of an idea that was sown in early 2021. It is the culmination of the online Story Fest the English Teachers' Forum planned and executed over a period of the past few months. The highlight of this anthology is the collaborative efforts our colleagues put in by way of hosting the sessions efficiently, attending them enthusiastically, managing the logistics, and writing stories specifically for the Story Fest. The stories presented online were subsequently compiled so that they could reach a wider audience. The dream has come to fruition in the form of the present anthology, a veritable tapestry comprising twenty-two remarkable stories, which can be savoured for their linguistic excellence, thematic range, writing style, freshness and vibrancy. The uniqueness of the anthology lies in the fact that it features stories written both in Hindi and English along with their detailed reviews and salient audience responses. The high point of the project is the convergence it has managed to achieve by placing in close proximity the creative potential of the budding writers alongside the free-flowing spate of the more established voices.



Praveen Kumar, who taught English language and literature in the various colleges of Himachal Pradesh for close to 30 years, retired as Principal from Govt. College, Sarahan, Distt. Sirmaur in 2019. He was a member of the Board of Studies in English for undergraduate classes for a two-year term. He co-edited an anthology *The Threshold*, a textbook for B.A. 1st year students of H.P. University, in 2002. He has chaired sessions in Conferences and Seminars on many occasions, and the papers presented by him at various forums have been well-received. He occasionally writes poetry, both in Hindi and English, short pieces on literature and topics of general interest, and also runs a podcast named *The Joy of Ideas*. Presently, he is the coordinator of English Teachers' Forum, Himachal Pradesh.

Junesh Kapoor is presently working as Principal, Government College Dhami, Shimla, Himachal Pradesh. His areas of interest include Comparative Literature, Translation Studies, Literary and Cultural Theory and Aesthetics. He has published research papers in these areas and has authored and edited several books.

AUTHORSPRESS
Publishers of Literary & Scholarly Books

ISBN: 978-93-5529-409-8

₹ 395 / $ 25

CONTENTS

"Terror": A Critical Review

Kulbhushan Sharma

Aatank, a gripping story written by Gurmeet Singh Bedi, is translated into English as "Terror" by Meenakshi P. Paul. Translation, in itself, is a challenging task that demands expertise on linguistic skills, knowledge of culture, technicality, and skills to overcome the problems — lexical-semantic, grammatical, syntactical, rhetorical, pragmatic, and cultural issues. It is an onus on the translator to salvage the idioms and expressions used in a particular culturally-structured language representing the social milieu. The biggest challenge before a translator is to pick up a particular story for the translation.

The story under scrutinising lens provides a basis for 'Perspectivism'. According to German philosopher, Friedrich Nietzsche, Perspectivism, a philosophical view, is that all ideations take place from particular perspectives which means there is a strand of possible conceptual schemes, or perspectives on which judgment of truth and value can be made. It is a general tendency on the part of most people to pass a judgment or frame opinions about others too soon. The frailty of the human beings to turn into sharp critics and point out flaws or shortcomings in others, make them blind to their own faults, inaccuracies and mistakes. Instead of reacting, the need is to relate, to associate, to introspect and then reflect. In the modern world, where everyone is surrounded by machines and hi-tech gadgets, there is an urgent need to understand the three words – sympathy, empathy and apathy quite deeply. The world seems to move under the mounting impact of 'self syndrome' and the best option for carving a beautiful world of co-existence is a possible reality if humanity sheds the last word and imbibes the former two essential words by understanding the fellow human beings.

The story is well-crafted and written in a satirical tone. On a close reading of the story, it has all the basic elements of a plot. Right from exposition to denouement, it keeps the reader under a spell and arouses the curiosity to know what is to come. The plot and structure are like strings. "Terror" has a well-knit structure, with the series of events forming the overall design of the story. The setting is confined to a bus

Study of nuclear shapes of some even nuclei

*Ali Singh[1], Y. Singh[2], Gulshan Mahajan[3], A. K. Vaishnav[4] and K. K. Gupta[5]

[1]Department of Physics, Greater Noida Institute of Technology, Greater Noida – 201306, INDIA
[2]Department of Physics, Govt. PG College, Dharamshala – 176215 (H.P.), India
[3]Department of Physics, Govt. College, Rajrog – 173031 (H.P.), India
[4]Department of Physics, Govt. College, Palampur – 176061 (H.P.), India
[5]Department of Physics, Govt. PG College, Dharkuna – 177103 (H.P.), India

*singh.mail@gmail.com

In Davydov asymmetric rotor (β – fixed, γ – fixed) the effect of $(-1)^I$ to state energy is a classical illustration where γ and ground state levels of energy are plotted against the asymmetric deformation γ of the nucleus [1]. For γ close to 0°, the Davydov model gives the symmetric rotor 'γ – band' energies. As γ increases the levels of γ – band decreases rapidly in energy and hence the even spin levels of the γ – band interact more and more with their partners in the ground band. The effect becomes extreme above γ = 20°. The interaction leads a repulsion which is the origin of the upturn in $E(4^+)$ near γ = 25°. Thus, the γ – band levels differ from the couplets arranged as $(2_\gamma^+, 3_\gamma^+), (4_\gamma^+, 5_\gamma^+), 6_\gamma^+$ –

In another approach, say γ – unstable or Wilets – Jean model [2] the energies of γ – band are expected to form couplets arranged as $2_\gamma^+, (3_\gamma^+, 4_\gamma^+), (5_\gamma^+, 6_\gamma^+)$ – These two different couplets of γ – band energy levels are significant in distinguishing between γ – soft and γ – rigid shapes of a nucleus. Zamfir and Casten [3] introduced a term 'staggering indices' S(I) which has the form –

$$S(I) = \frac{E(I+4)-(I+4)(I+1)}{E(I)} \qquad (1)$$

A clear distinction is arising in the γ – band in S (I) values, where both models exhibit in energy staggering, the sequencing is exactly opposite that is the phases of the S (I) in both the models would be reversed. Casten examined the values of the staggering indices obtained from the experimental data of even nuclei and found them to be matching with γ – soft predictions showing no evidence of γ – rigidity. Liu considered 140 even nuclei of mass region A = 64 – 200 where the most of the nuclei were found to be γ – soft but a few may be slightly triaxial. Almost all the axial nuclei are rightly γ – soft, some of them exhibiting shape transitions from axial to γ – soft to triaxial shape with increasing angular momentum (4). In our view point since the nuclei possessing $15^\circ \leq \gamma \leq 25^\circ$ are most appropriate to be considered as asymmetric rotor model description as they belong to transitional region. It will not be possible for a triaxial nucleus belonging to $\gamma \leq 20^\circ$ to show a staggering pattern of S (I) versus spin (I) in theoretical values. We plotted a number of graphs on S (I) versus spin (I) for γ = 10°, 15°, 20° and 25° on asymmetric rotor model values [5]. Another thing associated with S (I) is nature of axial rotor. For an axial rotor model the energy spectra has the form –

$$E_I = A[I(I+1) - B^2(I+4)^2] \qquad (2)$$

Here S (I) are small and positive in magnitude that show no staggering behaviour, but increase slowly with increasing spin (I). Of course, S (I) = 0 for all spin (I) if B = 0. If in $A[I(I+1)]$ are equally followed by axial as well as triaxial rotor. Thus, it becomes essential to distinguish triaxial rotor from axial rotors. This is done by corroborating them with the values of staggering indices S(I) in γ – band. We observe that the sign of S (I) changes alternatively for odd and even spins in the case of triaxial rotor but, S (I) in axial rotor does not change sign with spin. McCutchen referred to special solutions of the Bohr – Mottelson Hamiltonian that gave predictions for a triaxial structure in respect of five nuclei that is ^{110}Ru, ^{196}Pt, ^{192}Os, ^{194}Pt and ^{196}Pt [6].

In the present work the authors try to verify whether the nuclei proposed above except ^{196}Pt, since it is discussed already in ref [7], are associated with triaxiality and if yes then to what extent. Attempts have been made to discuss ^{110}Ru in recent past but, in ref. 8 only γ – band is considered and not the γγ – band while we consider it to take essential γ – band as well as γγ – band together since both are generated simultaneously by rigid rotor of Davydov.

The asymmetry parameter γ is evaluated from the energy ratio of two band head energies ($R = E2_\gamma^+/E2_1^+$) using the relation –

$$\frac{\sin^2 3\gamma}{\sin^2 3\gamma} = \frac{\left[1+\frac{1}{2}\sin^2 3\gamma\right]^{3/2}}{\left[1-\frac{1}{2}\sin^2 3\gamma\right]^{3/2}} \qquad (3)$$

This asymmetry parameter γ is fed to compute the rigid rotor model energies in γ and γγ – bands. The staggering indices S (I) for known experimental γ – band energies alongwith the rigid rotor energies are listed in table 1. The staggering indices for γγ – band in experiment and rigid rotor are listed in table 2.

Nuclear and Neutron star properties within the PREX-II motivated parameterization of relativistic mean field model

Virender Thakur,* Raj Kumar,† Pankaj Kumar, and Shashi K Dhiman‡
Department of Physics, Himachal Pradesh University, Summer-Hill, Shimla-171005, INDIA

Introduction

Neutron star is a highly dense and asymmetric nuclear system having a central density about 5-6 times the nuclear saturation density. The study of neutron stars proclaims that its internal structure is more complex as new degrees of freedo like hyperons and quark appear in the core. The Lead Radius Experiment (PREX) has recently given a model-independent extraction of neutron skin thickness of ^{208}Pb as $\Delta r_{np} = 0.283 \pm 0.071$ fm [1] by combining the original PREX result with the new PREX-II. Δr_{np} has been identified as an ideal probe on symmetry energy - a key but poorly known quantity that describes the isospin dependence of the equation of state (EOS) of nuclear matter and plays a critical role in various issues in nuclear physics and astrophysics. The large value of $\Delta r_{np} = 0.283 \pm 0.071$ fm suggests a very stiff EOS and large value of L around saturation density and generally gives rise to a large value of neutron star ra- dius and the tidal deformability [17].

Theoretical model

The Lagrangian density for the RMF model used in the present study [2, 3], is given by

$$\begin{aligned}\mathcal{L} &= \sum_q \overline{\Psi}[i\gamma^\mu\partial_\mu - (M - g_\sigma\sigma - g_\delta\delta\cdot\tau) \\ &- (g_\omega\gamma^\mu\omega_\mu + \frac{1}{2}g_\rho\gamma^\mu\tau\cdot\rho_\mu)]\Psi + \frac{1}{2}(\partial_\mu\sigma\partial^\mu\sigma - m_\sigma^2\sigma^2) \\ &- \frac{\overline{\kappa}}{3!}g_\sigma^3\sigma^3 - \frac{\overline{\lambda}}{4!}g_\sigma^4\sigma^4 - \frac{1}{4}\omega_{\mu\nu}\omega^{\mu\nu} + \frac{1}{2}m_\omega^2\omega_\mu\omega^\mu \\ &+ \frac{1}{4!}\zeta g_\omega^4(\omega_\mu\omega^\mu)^2 - \frac{1}{4}\rho_{\mu\nu}\rho^{\mu\nu} + \frac{1}{2}m_\rho^2\rho_\mu\rho^\mu \\ &+ \frac{1}{2}(\partial_\mu\delta\partial^\mu\delta - m_\delta^2\delta^2) + \frac{1}{2}c_1 g_\omega^2 g_\rho^2\omega_\mu\omega^\mu\rho_\mu\rho^\mu. \qquad (1)\end{aligned}$$

Result and Discussion

In the present work, new parameter set HPU (Table(I)) are obtained for Relativistic Mean Field (RMF) model by adjusting parameters of the model to fit exactly the available experimental data of total binding energies, charge rms radii for some closed shell nuclei $^{16,24}O$,$^{40,48}Ca$,$^{56,78}Ni$,^{88}Sr,^{90}Zr,$^{100,116,132}Sn$ and ^{208}Pb. We also include in our fit, the value of neutron skin thickness of ^{208}Pb from PREX-II Experimental data [1]. In table(II), we present results for properties of symmetric nuclear matter and neutron star and its tidal deformability at canonical mass ($\Lambda_{1.4}$) for HPU parameterization. The results are also compared with NL3 and IOPB-1 parameter sets. [4, 5]. The nuclear matter properties obtained by HPU parameterization are consistent with the empirical and the observed values. The value of neutron skin thickness Δr_{np} for ^{208}Pb is found to be 0.242 fm for HPU parameterization. In Fig.(1), we have plotted mass radius relationship of the neutron star using parameterization HPU,NL3 and IOPB-1 parameterization.It is observed that the maximum gravitational mass of the non rotating neutron star for HPU parameter set is 2.02 M$\odot$ which is in good agreement with the mass constraints from GW170817 event, pulsars PSRJ1614-2230, PSRJ0348+0432, and PSRJ0740+6620 [7–11]. The radius (including BPS crust) of canonical mass ($R_{1.4}$) is 13.35 Km for HPU parameterization which satisfies the recent radius constraints from NICER. The value of $\Lambda_{1.4}$ for EOSs computed with HPU parameterization is 629.09 which is consistent with the constraints from the GW170817

*Electronic address: virenthakur2154@gmail.com
†Electronic address: raj.phy@gmail.com
‡Electronic address: shashi.dhiman@gmail.com

Study of even-even Lead (Pb) isotopes based on Covariant Density Functional Theory

Virender Thakur,* Raj Kumar,† Pankaj Kumar, and Shashi K Dhiman‡
Department of Physics, Himachal Pradesh University, Summer-Hill, Shimla-171005, INDIA

Introduction

Nuclear many body system is very complex system and effective theoretical model is needed for reliable predictions in the nuclear structure systems. The production of the new isotopes [1] in recent years has revived a great interest in nuclear structure models. Neutron rich nuclides are very important systems [2] as the asymmetry between the proton and the neutron number increases in these systems and leads to the phenomena like neutron skin and halos. We have chosen Lead(Pb) nuclei from the periodic table as a representative of the heavy mass range systems for our theoretical study. Lead nucleus is very important system and it has important implications in the nuclear structure systems due to the magicity of proton number (Z) present in it and various experimental nuclear sturucture properties related to double magicity are available in literature [3, 4]. The isotopic chain under our theoretical investigation ranges from mass number A=182 to mass number A=214 for the Lead(Pb) nucleus. The theoretical model is based on the CDFT. The nuclear ground state observables like charge radii, root mean square radius and neutron skin thickness reflecting the size of the nucleus are studied and compared with available experimental data.

Theoretical model

This presented work is carried out with the Covariant Relativistic Hartee Bogoliubov (RHB) Theory [5] and the details of theoretical framework is also presented in our previous work [6].

*Electronic address: virenthakur2154@gmail.com
†Electronic address: raj.phy@gmail.com
‡Electronic address: shashi.dhiman@gmail.com

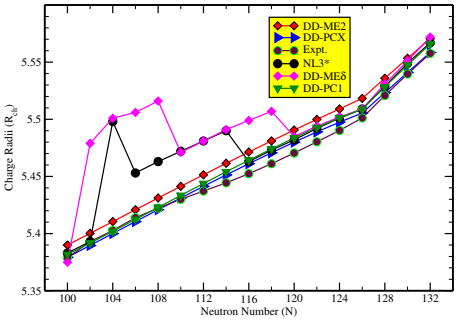


FIG. 1: (color online) Theoretical results of Root mean square charge radii (R_{ch}) compared with the availabe experimental data [7].

Result and Discussion

Nuclear charge radii (R_{ch}) and Root mean square radius (R_{rms}) are the key nuclear structure ground state observables that determine the size of the nuclear system. In addition to this, Neutron skin thickness (Δr_{np}) is also very important observable which reflects the stability of the nucleus. The theoretical results for R_{ch},R_{rms} and Δr_{np} are shown in the Fig. (1 ,2 and3) respectively.

The results for the nuclear charge radii R_{ch} in units of fermi meter (fm) are plotted against the neutron number (N) for the isotopic chain of Lead(Pb) nuclides ranging from mass number A=182 to A= 214 as shown in Fig. (1). The theoretical charge radius is calculated using the formulae [8] :

$$R_{ch} = \sqrt{r_p^2 + 0.64}\ \ fm \qquad (1)$$

Here, r_p denotes the rms radius of the proton density distribution and term 0.64 fm^2 accounts for the finite size of proton. Experimental results are also shown for comparison taken from ref. [7] and it can be

Lecture Notes in Networks and Systems 93

Simon Fong
Nilanjan Dey
Amit Joshi *Editors*

ICT Analysis and Applications

Proceedings of ICT4SD 2019, Volume 2

Springer

ICT Analysis and Applications

Flower Pollination Algorithm for Test Case Prioritization in Regression Testing

Priyanka Dhareula & Anita Ganpati

Conference paper

Part of the Lecture Notes in Networks and Systems book series (LNNS, volume 93)

Abstract

Flower Pollination Algorithm (FPA) is a significant addition made to Nature Inspired Metaheuristic Optimization Algorithms (NIMOA). It is inspired by the pollination process of flowering plants. In this research, FPA is used for Test Case Prioritization (TCP) in Regression Testing (RT). The algorithm uses code coverage of test cases as the input. The algorithm has no prior information of faults covered by the test cases. This study deals with prioritizing (ordering) the test cases in such a way that only those test cases are executed that covers maximum faults in minimum time of execution. For validation of the results Average Percentage of Fault Detected (APFD) metrics is used. APFD values for different ordering of test cases is calculated for three applications written in Java. The empirical results of APFD metrics for FPA order (TS_1) and FPA order (TS_2) are better as compared to Random Order of Original Test Suite (TS_3) and Reverse Random Order of (TS_4). Therefore, this paper states that FPA for TCP gives efficacy results in RT.

Keywords

Regression testing · Test case prioritization · Flower pollination algorithm · APFD

References

National Journal of Commerce and Management (NJCM)
Peer-Reviewed/Refereed Journal
ISSN 2394-6342 (online)
Volume 09, Issue 01, June 2022
http://njcm.pratibha-spandan.org

CORPORATE SOCIAL RESPONSIBILITY: A STUDY OF PARBATI HYDRO ELECTRIC POWER PROJECT KULLU IN HIMACHAL PRADESH

VIDYA DEVI

Assistant Professor (Commerce), Government College Karsog, Mandi, Himachal Pradesh

ABSTRACT

National Hydroelectric Power Corporation Ltd is a Mini Ratna Category -1Enterprise of the Government of India. The company is one of the largest organisations in the field of hydro power development in the country. Baira Siul hydroelectric project was the first project in Himachal Pradesh. NHPC is public sector undertaking operating many hydropower projects in Himachal Pradesh along with considering CSR is an integral part of NHPC. India is the first country in the world to mandate CSR legislation with the purpose to bring Sustainable Development .In Company Act 2013 it has made mandatory contribution of 2% of PBT on CSR activities specified in Schedule VII by the companies. NHPC has implemented a number of CSR initiatives for the community in field of education, health care, rural development, sports, livelihood generation, empowering women etc. Corporate Social Responsibility is strategic business social approach to enhance the practices of welfare in the field of environment, society and economy along with achieving the economic targets of business. The study has focused on the CSR Practices in Parbati Hydro Power Project of NHPC in the state of Himachal Pradesh. Himachal Pradesh is one of the richest states in generation of hydroelectricity. The state has about 25% contribution of national potential in hydropower. The government has been giving continuous support for the development of hydro projects. It is also one of the major sources of income to the state. These hydro projects are running by the Govt. of India as a public sector undertaking named SJVN Ltd. NHPC Ltd. Etc. The present study is focused on affected areas of Parbati Hydro electric power project of kullu district. For the purpose of study affected areas of projects such as Manikaran Valley, Gadsa Valley. And Sainj valley is taken. The study has been focused into the ground level realities of Corporate Social Responsibility in affected project area. For the purpose of study, a sample size of 80 respondents has taken randomly from the affected areas of Parbati projects. The questionnaire, interview and observation method are used for data collection .Researcher classified its data collection into five heads. The analysis of data is done through percentage method. The findings of the study presented the effective implementation of CSR initiatives on education and rural development in majority of study areas.

Keywords: NHPC, Corporate Social Responsibility, CSR Practices, Sustainable Development.

INTRODUCTION

Corporate Social Responsibility plays a vital role in the sustainable development of the country .The concept of CSR-SD brings an economy in such a platform where corporate sector considerate the welfare of society along with its economic growth. The benchmark companies use CSR as a SWOT strategy to make their place in market. The concept of 'Social Welfare' has been motivating the business

IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Assessment of Positive Impacts of Hydropower ProjectS on Economic Development of Kinnaur Districts of Himachal Pradesh.

***SOMKRISHN **PROF.S.S NARTA**

***.Research Scholar, Department of Commerce Himachal Pradesh University, Summer Hill ,Shimla-171005.**

****Chairmen Department of Commerce, Himachal Pradesh University, Summer Hill ,Shimla-171005.**

Abstract

The large-scale construction of developmental projects such as hydropower projects, mines, national highways, industries, etc in the tribal area has put an ambiguous position in the terms of social inclusion and social exclusion of tribal communities across India. Although the development projects are meant to improve the infrastructure along with the standard of living of the people, it leads to massive displacement many times. The development projects are crucial in creating job opportunities, building new skills, increasing income and consumption levels, but sometimes they can have more adverse effects that need to be addressed(Gautam, 2017). The development may sometimes bring disparity between the people and places. If handled properly, development activities may be socially inclusive for the affected populations. These projects have also brought about many socio-economic changes related to family type, income, housing patterns, social ties, mores and culture in the lifestyle of the people affected by the project. The present study is an attempt to study the demographic profile of the projects affected families viz -a viz positive impact of hydro power projects on the livelihoods of project affected people. Hydropower projects have marginally increased job opportunities for people affected by the project. Unemployment was not a major problem in the area affected by the project as agriculture and horticulture are the two main sources of income. Since the projects were installed and put into operation, the livelihoods and marketing opportunities for the agricultural products in the project area have increased. The results of the study shows that in order to get the maximum benefit from the hydropower projects, many joint families have broken into small families, which has weaken the social support systems. Even, after hydropower projects are built, access to educational facilities in project-affected areas is difficult due to heavy snowfall and road closures in winter. The living environment in the region is changing. From this it can be concluded that the installation and commissioning of hydroelectric power projects have improved the road infrastructure, which indirectly affected the housing conditions of the people affected by the projects.

Public Administration and COVID-19

Name: Malwinder Singh

Designation: Senior Research Fellow

Department of Public Administration

Punjabi University, Patiala, India

Abstract- COVID-19 is a worldwide public health crisis which has attracted the attention of policymakers and public administrators. Disaster management is an important part of the discipline of Public Administration which includes management of health crisis such as COVID-19. The paper aims to analyse the role of public administration during a major public health emergency by taking the example of COVID-19.

Key words- COVID-19, Public Administration, Pandemic, Disaster Management

I. INTRODUCTION

USA was facing crisis in 1960s due to social unrest, riots and losses in the Vietnam War. This crisis gave birth to NPA (New Public Administration) in the Minnowbrook Conference of 1968 wherein scholars discussed the role of Public Administration in providing solution to the problems of society. The scope and nature of public administration was altered in the process and Public Administration evolved as an independent subject in the following decades. NPA stressed that public administration should remain relevant and provide solutions to the problems of modern society. Minnowbrook Conference-II (1988) stressed on the rollback of the governments and involvement of private sector as well as civil society in governance. Diverse topics like information technology, comparative administration, globalization etc were discussed in the Minnowbrook Conference-III (2008). The overall intellectual reaction was that public administration should address the vital questions about governance in 'dark times'. Fast forward to 2020 there is a worldwide crisis i.e. COVID-19. What is the role of Public administration in tackling COVID-19? What are interlinks between COVID-19 as a public health crisis and Public Administration as a subject? What is the relevance of public administration in the COVID-19 crisis? These are important questions both for policymakers and academicians.

COVID-19 is a once in a century kind of crisis. It has impacted our civilization in multiple ways. World witnessed stringent government enforced lockdowns and social distancing norms. The isolation and death toll had an impact on mental health of people. So much so there was rise in cases of domestic violence and suicide. The world economy plummeted and we saw the greatest recession after the Second World War. The global value chains were disrupted. Also, people suffered from loss of employment as well as other financial losses. The health infrastructure was overwhelmed and governments didn't have effective strategy for dealing with such a health emergency.

COVID-19 is an infectious disease caused by severe acute respiratory syndrome coronavirus2 (SARS-CoV-2).COVID-19 is a new illness but it is caused by a coronavirus of the type first identified by Dr Almeida in 1964 at her laboratory in St Thomas's Hospital in London. We now know that the pandemic of COVID-19 began in December 2019 in or around the Huanan Seafood Wholesale Market in Wuhan. It results in mild to moderate respiratory illness in most cases but can be fatal for senior citizens and those with underlying medical conditions such as diabetes, cancer, cardiovascular diseases etc. It spreads through respiratory droplets exhaled by an infected person.

HUJ

Himachal Pradesh University Journal

(Humanities and Social Sciences)

Vol-10

No.1 June 2022

ISSN 2277-1425
e-ISSN 2277-1433

A Peer Reviewed Biannual
Journal of Himachal Pradesh University

CONTENTS

अंक 24 भाग-01 जुलाई-सितंबर (2022) ISSN:2348-7771

PEER REVIEWED AND REFEREED JOURNAL

GENERALIMPACTFACTOR

आभ्यंतर

लोक, भाषा, विश्व साहित्य और समकालीन वैचारिकी का मंच

Impact Factor-2.5482

संपादक
कुमार विश्वमंगल पाण्डेय

हिन्दी एवं अन्य के सम्बन्ध व्यतिरेक से तुलनात्मक अध्ययन की एक दिशा

डॉ. आनंद के. पांडे
असिस्टेंट प्रोफेसर हिंदी, एन.एम.वी. कॉलेज,
जलगांव (जिला-जलगांव)

[illegible]

[illegible]

[illegible]

अंक-01 जनवरी-मार्च (2023) ISSN:2348-7771

PEER REVIEWED AND REFEREED JOURNAL

IIJIF GENERAL IMPACTFACTOR

आभ्यंतर

लोक, भाषा, विश्व साहित्य और समकालीन वैचारिकी का मंच

Impact Factor-2.5482

संपादक

कुमार विश्वमंगल पाण्डेय

[illegible]

[illegible]