## 3.3.1.1 Number of research papers in the Journals notified on UGC CARE list year wise during last five years

HEI Input:

| 2023-24 | 2022-23 | 2021-22 | 2020-21 | 2019-20 |
|---------|---------|---------|---------|---------|
| 22 | 27 | 15 | 24 | 12 |

DVV Suggested Input:

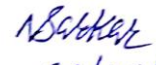| 2023-24 | 2022-23 | 2021-22 | 2020-21 | 2019-20 |
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| 11 | 08 | 07 | 12 | 09 |

Change Input:

| 2023-24 | 2022-23 | 2021-22 | 2020-21 | 2019-20 |
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| 2022-23 | | | | | | |
|---|---|---|---|---|---|---|
| Sl. Number | Title of Paper | Author | Department | Journal Name | ISSN Number | Year of Publ. |
| 1 | Income convergence among the districts of WB | Bankim Chandra Ghosh and Utpal Das | Economics and Commerce | Economic & Political Weekly | 2349-5162 | 2022 |
| 2 | Quality of life and habitability of Katwa Town, West Bengal: An analysis of residential satisfaction | Madhumita Sen and Toton Ghosh | Geography | Scope | 1177-5653 | 2022 |
| 3 | Grey Optical Dips in KMN model by First Integral Method | DebakinandanMajee | Physics | IJRAR | 2348-1269 | 2022 |
| 4 | Human Skills on Migrant Types- A State Level Study from India | Kinkini Bhattacharjee | Commerce | Rabindra Bharati University Journal of Economics | 0975-802X | 2022 |
| 5 | Nonlinear electrostatic ion cyclotron wave collapse and formation of wave packets in the presence of trapped electrons | Akash Biswas | Mathematics | Physical Review E | 2470-0045 | 2022 |
| 6 | Excitation of ion acoustic collisionless shock by a moving obstacle | Akash Biswas | Mathematics | Physics of Plasmas | 1873-2666 | 2022 |
| 7 | Religious and Social Group Diversity in Borrowing and Spending Behaviour" Analysis of Survey results from rural West Bengal, India | Moumita Poddar Rana | Economics | ECONOMIC ANNALS | 1820-7375 | 2023 |
| 8 | Assessing Urban Flood Hazard Vulnerability Using Multi-Criteria Decision Making and Geospatial Techniques in Nabadwip Municipality, West Bengal in India | Tanmoy Basu | Geography | Atmosphere | 2073-4433 | 2023 |
| 9 | In silico analyses of Wnt1 nsSNPs reveal structurally destabilizing variants, altered interactions with | Amalesh Mondal | Physiology | Scientific Reports | 2348-1269 | 2022 |

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| | Frizzled receptors and its deregulation in tumorigenesis | | | | | |
| 10 | A STUDY ON THE IMPACT OF MERGER ON FINANCIAL PERFORMANCE OF PUBLIC SECTOR BANKS IN INDIA | SK SHAKEEL | Commerce | THE CHARTERED ACCOUNTANT | 0009-188X | 2023 |

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# 2022-23

Title of the paper: Income convergence among the districts of WB

Author: Bankim Chandra Ghosh and Utpal Das

Journal: Economic & Political Weekly (SCOPUS Indexed)

Link to the journal: https://www.epw.in/

Link to the article: https://www.epw.in/journal/2022/44-45/special-articles/income-convergence-among-districts%C2%A0-west-bengal.html

Proof of presence in UGC care list:

**Economic and Political Weekly**

Years currently covered by Scopus: from 1978 to 1980, from 1982 to 1986, 1993, from 1995 to 1997, from 2007 to 2024

Publisher: Economic and Political Weekly

ISSN: 0012-9976   E-ISSN: 2349-8846

Subject area:  ( Social Sciences: Sociology and Political Science )  ( Social Sciences: Political Science and International Relations )
( Economics, Econometrics and Finance: General Economics, Econometrics and Finance )

Source type: Journal

| CiteScore 2023 | ⓘ |
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| SJR 2023 | ⓘ |
|---|---|
| 0.251 | |

| SNIP 2023 | ⓘ |
|---|---|
| 0.537 | |

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First Page of the paper:

# Income Convergence among the Districts of West Bengal
## Evidence from Neoclassical Growth and Panel Unit Root Models

RAMESH CHANDRA DAS, BANKIM GHOSH, UTPAL DAS

The study of the inter-district convergence of per capita incomes in any state or country is crucial to policy agenda as it exposes the scenario of real income distribution. The present paper examines inter-district convergence of per capita income in West Bengal using the neoclassical growth and panel unit root models; the second is an advanced approach compared to the first. The results in line with the two approaches show that the districts are not converging in terms of income; rather the districts are diverging between 1993 and 2014. It is an alarming knock to the state since divergence in income leads to rising inequality across districts; it will hamper the development of the state.

Since the introduction of the liberalisation policy in India, there has been an increasing growth of income in aggregate and per capita terms. However, there have been growing disparities across states in income and several other economic indicators during the post-liberalisation period (Marjit and Mitra 1996; Ghosh et al 1998; Subrahmanyam 1999; Dasgupta et al 2000; Das and Dinda 2014; Bhaduri 2008, 2016). Evidently, the states are diverging from each other. The districts in these states are also affected by unequal development. In common terms, the effect of the liberalisation policy has not trickled down to the bottom quartile of the population of the districts in West Bengal.

There are a few studies on income convergence at the district level in India. While the studies of Singh et al (2014) and Das et al (2015) cover 210 Indian districts, the study related to the districts of Odisha was carried out by Panda and Trivedi (2015). No studies on income convergence or divergence have been conducted on the districts of West Bengal to date, although Raychaudhury and Halder (2009) have investigated on the inter-district disparity in social and physical infrastructure in West Bengal. The present paper, thus, examines whether the districts of West Bengal are income converging in individual and panel data formats.

The entire study has been arranged as follows: the next section presents a review of the related literature. This is followed by the data, theoretical framework, methodology, empirical findings and discussion, and concluding remarks.

### Review of Related Literature

Although there is a vast amount of literature on income convergence across countries, regions, and groups, there are hardly any studies on income convergence at micro levels such as districts in a state in a specific country. Here, we present some studies on income convergence in general and some that are specific to micro levels.

The seminal work of Barro and Sala-i-Martin (1992) showed that the United States (us) produced a clear evidence of convergence in per capita income. But the findings can be reconciled quantitatively only if the diminishing returns to capital set in very slowly. In another insightful study, Sala-i-Martin (1996) applied unconditional and conditional $\beta$ convergence to a variety of data sets covering a large cross-section of countries, such as the subsample of Organisation for Economic Co-operation and

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Title of the paper: Quality of life and habitability of Katwa Town, West Bengal: An analysis of residential satisfaction

Author: Madhumita Sen and Toton Ghosh

Journal: Scope (SCOPUS Indexed)

Link to the journal: https://scope-journal.com/

Link to the article: https://scope-journal.com/published_paper/284/Quality+of+life+and+habitability+of+Katwa+town%2C+West+Bengal%3A+An+analysis+of+residential+satisfaction

Proof of presence in UGC care list:

**Scope**
Years currently covered by Scopus:   2009, from 2011 to 2023
Publisher:  Otago Polytechnic
ISSN:  1177-5653   E-ISSN:  1177-5661
Subject area:   ( Arts and Humanities: Visual Arts and Performing Arts )
Source type:  Journal

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| CiteScore 2023 | |
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| 0.103 | (i) |
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| 0.177 | (i) |
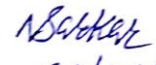
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First Page of the paper:

## Quality of life and habitability of Katwa town, West Bengal: An analysis of residential satisfaction

Madhumita Sen & Toton Ghosh
1. Assistant Professor of Geography, Katwa College, Katwa, Pin-713130, West Bengal, India
2. State Aided College Teacher. Katwa College, Department of Geography. Katwa, Pin-713130, West Bengal, India
E-mail: sen.madhumita29@gmail.com  totonghosh6@gmail.com

**Abstract**: The study aims to understand the quality of life and habitability of the town Katwa of East Bardhaman district in West Bengal, India. The main thrust for this is given to the residential satisfaction index which has been calculated on the basis of scores given by the respondents on ten variables under three aspects - public service (PS), social environment (SE), and dwelling unit support services (DuS). A total of 200 households were surveyed and the analysis of data reveals that citizens are more satisfied with dwelling support services i.e., garbage collection, water supply, and electricity. They are not satisfied with the accessibility of recreation facilities, health services, and sewerage and drainage conditions. Education facilities are not also reaching a satisfactory level. Municipal ward-wise data analysis and mapping help to identify the ward which has a lack of services provided by the municipality. The Center of the town i.e., wards no 5,6 and 17 have better serviceability in terms of PS, SE, and DuS while the periphery wards show a low satisfaction index. These findings may help the local administrator to take proper planning so that peripheral areas will be developed in near future.
**Keywords**: Census town, habitability index, municipality wards, public service index etc.

### Introduction:

The concept of Quality of Life has become popular since 1960sas an instrument to measure the impact of developmental policies (Beukes, 1977). Quality of life is a broader concept having two dimension- objective and subjective. Objective dimension represents external condition of life while subjective dimension refers to the individual's appraisal to that objective condition of life. In other wards it is the measurement of cognitive and affective reaction to his or her life i.e., the satisfaction (Das, D.2007). In objective dimension respondents are asked to report their living condition according to some given measures instead of asking to evaluate whether their living condition is good or bad (Matikka, 2001). On the other hand, subjective dimension tries to assess the satisfaction of people with their living condition. Residential satisfaction, the subjective dimension of quality of life is the perception of feelings and consciousness of one's place of residence (Cutter, 2013). It has been used to predict individual's perception about quality of life (Campbell, Converse and Rodgers, 1976). The term 'residential satisfaction' was first introduced by Fried and Gleicher in 1961 in the context of living in an urban slum. Lu (1999) stated that residential satisfaction is a complex construct, affected by variety of environmental and socio-demographic variables. It depends on the relation between a household's needs, aspirations and current housing conditions (Barcus, 2004; Jiang, Feng, Timmermans, and Li, 2017). It has positive correlation with dwelling structure, the social environment support services and public facilities (Mohit, Ibrahim and Rashid, 2010).

The concept of residential satisfaction has multidisciplinary application. It is used to assess individual's perception of the residential environment in the field of environmental psychology (Francescato et al, 1979; Michelson, 1977). It is used to assess quality of housing, neighborhood condition in community development, regional planning and demography by the civil engineers to evaluate the success of dwelling units.

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Title of the paper: Grey Optical Dips in KMN model by First Integral Method

Author: DebakinandanMajee

Journal: International Journal of Research and Analytical Reviews

Link to the journal: https://www.ijrar.org/

Link to the article: http://ijrar.org/viewfull.php?&p_id=IJRAR22C2812

Proof of presence in UGC care list:

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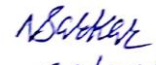
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First Page of the paper:

## Grey Optical Dips in KMN model by First Integral Method

*Debakinandan Majee*

*Department of Physics, Katwa College,*
*Katwa, PurbaBardhaman, PIN-713130.*

**Abstract:** *The first integral method is an effective method to obtain exact solution in closed form for some nonlinear evolution equation. Different type of data can transmit through optical fiber and this data transmission can be modelled by different type of evolution equations, mostly by Nonlinear Schrodinger type equation. For different physical situation, this model can be changed accordingly and in this case to deploy both Kerr and non-Kerr effect of optical fiber we consider the Kundu-Mukherjee-Naskar equation. The first integral method is applied to solve this and grey optical soliton solution a.k.a. grey optical dip is found.*

Keywords: Optical fiber, optical soliton, grey optical dip.

### 1. Introduction:

Transmission of information through optical channel is based on the propagation of dark and bright solitons and mostly described by nonlinear Schrodinger equation (NLSE).[1,2] A good model of consideration to transmit data is governed by the Kundu-Mukherjee-Naskar (KMN) equation which is an extension of NLSE containing mixed type of nonlinear effects i.e. both Kerr and non-Kerr law nonlinearities have been considered.[3,4,5] The KMN model is described by the equation given by

$$i\frac{\partial \psi}{\partial t} + a\frac{\partial^2 \psi}{\partial x \partial y} + ib\psi\left(\psi\frac{\partial \psi^*}{\partial x} - \psi^*\frac{\partial \psi}{\partial x}\right) = 0. \tag{1}$$

The time evolution of pulses through optical fiber is governed by the first term and the coefficients of dispersion and nonlinearity are ensured by the coefficients $a$ and $b$ respectively.

This equation (1) was first developed for the description of ocean waves from basic hydrodynamic equation and later waves in plasma was also described through this model.[6,7] Since this equation (1) belongs to the NLSE hierarchy, it is a completely integrable equation and can be solved by inverse scattering transform. Many studies has been done in correspondence with (1) to examine the propagation of solitons through optical fiber and many mathematically sophisticated tools has been used to find the solutions of evolution equations in its exact form.[8,9,10]

In this study we shall use an algebraic method called first integral method [8,9,10] to solve the above equation and shall interpret the results in proper physical contexts. So usage of algebraic methods (a pure mathematical tool) to solve a problem occurring in physics makes this study very much multi-disciplinary.

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Title of the paper: Human Skills on Migrant Types- A State Level Study from India

Author: Kinkini Bhattacharjee

Journal: Rabindra Bharati University Journal of Economics

Link to the journal: https://rbu.ac.in/home/page/112

Link to the article:
https://rbu.ac.in/home/avz9s6ve0gq6/public_html/ckfinder/userfiles/files/Economics_Journal__VOLUME_-_XVI__%202022pdf.pdf

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First Page of the paper:

# Human Skills of Migrant Types-
# A State Level Study from India
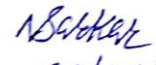
## Atanu Sengupta[1] & Kinkini Bhattacharjee[2]

**Abstract**

*In India, people always moved from one place to an other from time immemorial. In the present day, we observe three types of migration- Temporary, Semi-permanent and Permanent. Temporary migration is generally seasonal. People go to other places to augment their earnings in the lean season (Keshri and Bhagat 2010; Sengupta and De 2018). Semi-permanent migration is often based on a quest for a better life. This decision has a probability of a reverted if the end is not very happy. Permanent migration, on the other hand, is often a lifelong decision. People shift their roots to a completely new place for many reasons. We have to be very clear about the aim of our present study. It is not a study of the nature of migration or its causes. It is a study of the type of skills the migrants bring with them. We then suggest policies to attract skilled migrants. In the present study, we emphasize on the human skills of the different types of migrants indexed by literacy rates. We try to understand the level of literacy rates of these three types of migrants using the Census data. In this paper, we are interested in studying the nature of the skill that the migrants carry with them. For this we have censored our data into two parts: migrants who have some human skills and those they do not. Tobit is merely used to study what are the factors that affect the probability of migrant belonging to any of these sets. This probability is different for different category of migrants. So we have used different tobit models in our exercise. For analytical purpose we have considered theTobit regression along with its marginal effects to understand the impact of our chosen parameters on the literacy rate of various migrant types. It is very curious to know whether there are any differences among the different types of migrants in this regard. Our analysis shows that the percentage of literates among the migrants is explained by a number of factors. For Permanent migrants economic factors (such as consumption) are important. For Semi- permanent and Temporary, the Law and Order situation is more vital. This indicates a clear dichotomy among the migrant types.*

**Keywords :** Migration, Literacy, Crime rate, Rural-Urban Divide

**JEL :** J61, A20, K14, I30

[1]Professor, Department of Economics, The University of Burdwan,
email: sengupta_atanu@yahoo.com
[2]Research Scholar, Department of Economics, The University of Burdwan,
email: bhattacharjeekinkini93@gmail.com

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Title of the paper: Nonlinear electrostatic ion cyclotron wave collapse and formation of wave packets in the presence of trapped electrons

Author: Akash Biswas

Journal: Physical Review E (SCOPUS Indexed)

Link to the journal: https://journals.aps.org/pre/

Link to the article: https://journals.aps.org/pre/abstract/10.1103/PhysRevE.106.055206

Proof of presence in UGC care list:

Physical Review E
Years currently covered by Scopus: from 1993 to 2024
Publisher: American Physical Society
ISSN: 2470-0045  E-ISSN: 2470-0053
Subject area: ( Mathematics: Statistics and Probability ) ( Physics and Astronomy: Statistical and Nonlinear Physics ) ( Physics and Astronomy: Condensed Matter Physics )
Source type: Journal

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SJR 2023
0.805                  ⓘ
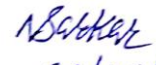
SNIP 2023
0.875                  ⓘ

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## Nonlinear electrostatic ion cyclotron wave collapse and formation of wave packets in the presence of trapped electrons

Akash Biswas,[*] Debkumar Chakraborty, and Samiran Ghosh
*Department of Applied Mathematics, University of Calcutta, 92 Acharya Prafulla Chandra Road, Kolkata-700009, India*

The weakly nonlinear and dispersive electrostatic ion cyclotron wave dynamics in the presence of Schamel distributed trapped electrons is studied in collisionless plasmas. The dynamics of the nonlinear wave is shown to be governed by a Schamel-Ostrovsky type equation. Analytical and numerical solutions of this equation reveal the collapse of a solitary (localized) pulse at a critical time that depends on the trapping parameter and the strength of the magnetic field. The time-dependent computational result is noteworthy, which predicts the formation of wave packets (wave group) beyond the critical time. The results are in good agreement with the astrophysical observations in auroral plasmas.

### I. INTRODUCTION

The study of nonlinear wave propagation in a magnetized plasma is an interesting topic of research from both experimental and theoretical points of view as the inclusion of magnetic field in plasmas can change the entire wave dynamics by introducing a different space and timescales compared to unmagnetized plasma [1]. In a magnetized electron-ion plasma, one of the low-frequency eigenmodes is the electrostatic ion cyclotron wave (EICW) mode [2], which is observed in laboratory plasmas [3,4].

Moreover, several satellite (S3-3, ISEE-1, Viking, Polar, GEOTAIL, and FAST) observations also confirm the existence of EICWs in the auroral magnetosphere at altitudes between $(3-8) \times 10^3$ km and beyond [5–13]. These waves are believed to be responsible for the plasma heating [14].

The astrophysical [5–13], theoretical [15–23], and experimental [24–26] observations reveal that the EICWs exhibit nonlinear coherent (spiky, sawtooth, bipolar) structures in response to the large amplitude disturbances. These coherent structures are believed to be associated with the multiharmonic EICWs due to the ion shear flow in the absence of trapped electrons [22,23,26].

However, in the auroral acceleration region, a significant fraction of the electrons are trapped by the EICWs between the ion cavities [27]. Also, the FAST satellite observation [11] and simulation [28] on auroral magnetosphere confirm the existence of electron holes; the signature of the presence of trapped electrons. In the presence of a strong magnetic field, the electron holes are generated through the process of magnetic reconnection [29–32]. These holes are characterized by a localized positive potential well in which a population of electrons is trapped [33,34] and

are well explained by the Schamel's distribution (a vortex distribution) [35–38]. The transport properties of nonlinear EICWs in the presence of trapped electrons are not well investigated [39].

In this article, we present a theoretical and computational study on the weakly nonlinear and dispersive transport properties of EICWs in the presence of trapped electrons in collisionless and homogeneous plasmas. The trapped electrons are incorporated in the plasma through the Schamel's distribution [35–38]. The external uniform and static magnetic field is assumed to be weak under the assumption that the ion cyclotron frequency $\Omega_i$ $(=eB_0/m_i$, $e$ is the magnitude of the electric charge, $B_0$ is the magnitude of the magnetic field, and $m_i$ is the ion mass) is small compared to the ion oscillation frequency $\omega_{pi}$ $(=\sqrt{n_0 e^2/(\epsilon_0 m_i)}$, $n_0$ is the equilibrium plasma density, and $\epsilon_0$ is the permittivity) so that the ratio $\Omega = \Omega_i/\omega_{pi} \sim O(\sqrt{\epsilon})$ (where $\epsilon$ is a measure of the smallness of the perturbed amplitude). It is shown that the weakly nonlinear dynamics of EICW is governed by a rotation modified Schamel equation or Schamel-Ostrovsky equation (SOE) due to the Lorentz force induced rotation. This derived nonlinear SOE is solved analytically with the help of a two-timescale Krylov-Bogoliubov-Mitropolsky (KBM) perturbation method [40] and numerically for the typical auroral plasma parameters. Depending on the strength of the magnetic field and trapping parameter, both the analytical and the computational results predict (i) the existence of a critical time $\tau_{cr}$ (that determines the life of a solitary pulse) at which the nonlinear wave collapses, the formation of (ii) oscillatory tails and (iii) EICW packets (wave group) in the long time. The computational results are in qualitative agreement with the astrophysical observations [12].

The article is organized in the following manner: The physical model with basic equations and the derivation of the SOE are provided in Sec. II. The approximated analytical solution of the SOE is derived in Sec. III. The computational results with graphical representations are discussed in Sec. IV. Finally, the results and their possible applications in the context of auroral plasmas are briefly discussed in Sec. V.

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*Corresponding author: akash1995.biswas@gmail.com;
Present address: Department of Mathematics, Katwa College, Katwa, Purba Bardhaman-713130, India.
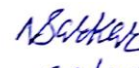
Title of the paper: Excitation of ion acoustic collisionless shock by a moving obstacle

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Author: Akash Biswas

Journal: Physics of Plasmas (SCOPUS Indexed)

Link to the journal:https://pubs.aip.org/aip/pop

Link to the article: https://pubs.aip.org/aip/pop/article-abstract/29/12/122304/2843475/Excitation-of-ion-acoustic-collisionless-shock-by?redirectedFrom=fulltext

Proof of presence in UGC care list:

## Physics of Plasmas

Formerly known as: Physics of Fluids B

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Publisher: American Institute of Physics

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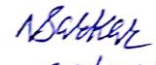
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# Excitation of ion acoustic collisionless shock by a moving obstacle

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**ABSTRACT**

The ion acoustic wave modulation induced by a steadily moving obstacle (charged density object) is studied in collisionless, unmagnetized, and homogeneous plasmas. In the weakly nonlinear and high dispersive limit, the modulated disturbance induced excitation is shown to be described by a forced/driven nonlinear Schrödinger equation that is solved exactly for some special analytical forms of the driven term. A more interesting and striking phenomenon predicted by the computation is the excitation of the ion acoustic shock at a supersonic relative speed of the obstacle. The results are in good agreement with the observations in low altitude auroral plasmas. The relevance and potential applications of the results in future plasma experiments are also discussed.

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## I. INTRODUCTION

In hydrodynamics, different types of wave patterns excited by a moving obstacle in a fluid have long been an interesting topic of research because of its wide applications in atmospheric dynamics, ocean dynamics, and also various engineering applications.[1,2] Physically, the motion of this object at a certain speed acts as a continuous source of disturbance in the medium.[3–5] Most of the fascinating nonlinear wave patterns, such as the wake field and the precursor soliton, are well explained through a forced Korteweg-de Vries (fKdV) equation or a forced generalized Boussinesq equation[6–8] in the presence of such disturbances due to the moving obstacle.

Fluid concepts have often been applied in plasmas, which successfully explain the collective phenomena. Theoretical and experimental results confirm that in the weakly nonlinear and dispersive limit, the dynamics of the nonlinear ion acoustic waves (IAWs) are governed by a KdV equation that exhibits soliton solutions.[9–13] Wake field patterns related to nonlinear IAWs also occurred behind a moving charged object (particle) in plasmas, and the results are well explained through an fKdV equation.[14] These wakes play an important role in the macroscopic dynamics of the electron hole in plasmas.[15,16] Recently, theoretical[17,18] and simulation[19] results demonstrate the excitation of nonlinear IAWs by an obstacle (charged density object) moving with a constant speed in plasmas, which exhibits waves

patterns, such as wake field, pinned soliton, and precursor soliton. These nonlinear coherent structures are also observed in complex plasma experiments.[20–22]

The signature of IAW modulations by a moving charged object is observed in the simulation.[19] Moreover, an intrinsic character of the nonlinear waves is the self-interactions, which introduces a self-focusing effect, and the nonlinear Schrödinger equation (NLSE) controls the modulated wave dynamics which exhibits a wide class of nonlinear structures.[23–30] The theoretical[31–37] and experimental[38–40] results confirm that in the weakly nonlinear and highly dispersive limit, dynamics of the nonlinear modulated IAW are governed by the NLSE. However, the excitation of the modulated nonlinear IAWs by a steadily moving obstacle and their interactions in plasmas are still open questions.

In this work, we present a theoretical and computational study on the excitations of weakly nonlinear and highly dispersive IAWs by a modulated weak disturbance arising due to the presence of a steadily moving obstacle (here charged density object) and their interactions in collisionless, unmagnetized, and homogeneous plasmas. A realistic forced/driven nonlinear Schrödinger equation (fNLSE) is developed that governs the interaction dynamics of the moving obstacle and the modulated nonlinear wave. This derived fNLSE is solved exactly for some special analytical forms of the forcing term which exhibit the

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Author: Sk. Shakeel

Journal: The Chartered Accountant

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**BANKING**

## A study on the impact of merger on Financial Performance of Public Sector Banks in India

**\*CA Sk Shakeel** and **\*\*Dr. Sukamal Datta**
\*Is member of the Institute. \*\* Author is an Academician. They may be reached at CASKL2013@GMAIL.COM and eboard@icai.in

variables are taken namely Capital Adequacy ratio (CAR), Earnings per Share (EPS), Return on Assets (ROA), percentage of gross NPA to advances and percentage of net NPA to advances. We have taken data for twelve quarters, six quarters from pre-merger period and six quarters from post-merger period. Data are analyzed through paired t-test. We have found from the research that there is a significant impact of merger on the financial performance with respect to variables such as Capital Adequacy, percentage of gross NPA to advances and percentage of net NPA to advances, while no significant impact of merger on EPS and ROA.

### Introduction

In India, the banking system has started in 1770 with the Bank of Hindustan and since then the banking system started its operation in various fields or aspects. Indian banking system is one of the important parts of the Indian financial system. It can be said that the banking system is the backbone of the Indian financial system as the monetary transactions are done through the banking system, regulated by RBI. However, since many years the merger of banks has been taking place for better growth, better returns to stakeholders, future prospect etc. However presently when there were twenty-seven public sector banks the finance minister put a decision on merger of thirteen banks on 17th September'2018 and 30th August'2019 and as a result of which there are twelve public sector banks in India after this merger.

Finance Minister Smt. Nirmala Sitharaman announced the merger of 13 public sector banks vide circular RBI/ 2019-20/197 FIDD.CO.LBS. BC.No.22/02.01.001/ 2019-20 dated 30.03.2020 for the merger of 10 public sector banks and vide press release 2018-2019/2329 dated 30.03.2019 for the amalgamation of Vijaya Bank, Dena Bank with Bank of Baroda, and this banking reform has reduced the total number of public sector banks from 27 to 12. In this paper a study has been carried out to show the impact of merger on the financial performance of public sector banks in India and also to make a comparative analysis before and after merger to evaluate the effectiveness of this merger. Five financial

Table 1: List of Merged Banks in Recent Times with Business Size.

| Date of announcement of merger | Anchor Bank | Amalgamating Bank | Business Size (in ₹) | Rank by Size |
|---|---|---|---|---|
| 17th September' 2018 | Bank of Baroda (BOB) | ✓ Vijaya Bank ✓ Dena Bank | 16.13 lakh cr | 3rd |
| 30th August'2019 | Canara Bank | ✓ Syndicate Bank | 15.20 lakh cr | 4th |
| 30th August'2019 | Indian Bank | ✓ Allahabad Bank | 8.08 lakh cr | 7th |

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Title of the paper: Religious and Social Group Diversity in Borrowing and Spending Behaviour: Analysis of Survey results from rural West Bengal, India.

Author: Dr Moumita Poddar Rana

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*Tanmoyee Banerjee (Chatterjee)* **
*Ajitava Raychaudhuri* ***

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# RELIGIOUS AND SOCIAL GROUP DIVERSITY IN BORROWING AND SPENDING BEHAVIOUR: ANALYSIS OF SURVEY RESULTS FROM RURAL WEST BENGAL, INDIA

**ABSTRACT:** India is a nation characterised by diversity in religion and caste. This paper attempts to determine whether diversity among religious and social groups has any impact on the borrowing and spending behaviour of households in West Bengal, India. We conduct a Fairlie decomposition analysis to evaluate the religious and caste differences in the socio-economic variables that mostly contribute to the disparity in institutional borrowing, use of institutional loans, and use of banking services using a household-level primary survey in two districts of West Bengal, India. The results of the decomposition analysis in terms of social group differences and religious group differences show that households belonging to the unreserved category and the Hindu population are more likely to hold savings bank ac-counts, make use of institutional borrowing, and use loans for production purposes than different reserved categories and the Muslim population, respectively. The gap between the reserved and unreserved populations and the Hindu and Muslim populations in terms of institutional borrowing and the use of loans for production purposes widens for regular wage earners and casual labourers in non-agriculture. To reduce the gap between social and religious groups, occupation categories play a major role. The implication is that wider access to financial services should be provided to all sections of the population.

**KEY WORDS:** religious diversity; caste diversity; borrowing behaviour, spending behaviour, Fairlie decomposition analysis; West Bengal.

**JEL CLASSIFICATION:** C10, G21, G51, G53

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Title of the paper: Assessing Urban Flood Hazard Vulnerability Using Multi-Criteria Decision Making and Geospatial Techniques in Nabadwip Municipality, West Bengal in India

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Author: Tanmoy Basu

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*Article*

# Assessing Urban Flood Hazard Vulnerability Using Multi-Criteria Decision Making and Geospatial Techniques in Nabadwip Municipality, West Bengal in India

Tanmoy Basu [1], Biraj Kanti Mondal [2,*], Kamal Abdelrahman [3], Mohammed S. Fnais [3] and Sarbeswar Praharaj [4]

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**Abstract:** The flood hazard risks and vulnerability in the urban areas alongside major rivers of India have been gradually increasing due to extreme climatic events. The present study is intended to assess flood hazard vulnerability and potential risk areas and aims to ascertain the management strategies in Nabadwip Municipality, a statutory urban area of West Bengal. The multi-criteria decision making (MCDM) of selected criteria and geospatial techniques have been employed to determine the urban flood vulnerability in the study area. The study has been conducted using secondary datasets including relevant remotely sensed data and participant observation. The potential flood-affected zones have been determined using the normalized difference flood index (NDFI) and flood vulnerability index (FVI). The analysis of the standardized precipitation index (SPI) of 20 years of monthly precipitation shows the variability of seasonal rainfall distribution in the study area. Furthermore, the spatial distribution of the composite Ibrahim index of socio-economic development accents that the urban development of the study area was uneven. The municipal wards situated in the central and northeastern portions of Nabadwip Municipality were extremely vulnerable, whereas the western and southwestern wards were less vulnerable. It is also revealed from the strengths–weaknesses–opportunities–challenges (SWOC) of the principal management strategies of the flood situation analysis that the unplanned sewerage system is one of the most effective weaknesses in the area. All-embracing and integrative flood management strategies need to be implemented in the study area considering the intra-regional vulnerability and development for the resilient and sustainable development of the study area.

**Keywords:** urban flood; vulnerability; MCDM; SWOC; NDFI; FVI; integrated management

## 1. Introduction

Flood occurrences and their consequences present a challenging circumstance for urban dwellers worldwide, particularly in developing countries [1]. Several urban residents in newly developed flood-prone areas in developing countries are at risk of flooding as a result of rising urbanization and population growth [1]. The frequency and intensity of urban floods are influenced by many indicators. Urban areas' flood vulnerability and risk are driven by the topography and several socio-economic indicators that are related to flood 'exposure', 'sensitivity', and 'adaptive capacity' [2]. In the era of climate change, human-induced activities and rapid urbanization are worsening the risk of flood vulnerability [1]. At present, climate change can transform the conditions of precipitation, which

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Title of the paper: In silico analyses of Wnt1 nsSNPs reveal structurally destabilizing variants, altered interactions with Frizzled receptors and its deregulation in tumorigenesis

Author: Amalesh Mondal

Journal: Scientific Reports (SCOPUS Indexed)

Link to the journal: https://www.nature.com/srep/

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# In silico analyses of *Wnt1* nsSNPs reveal structurally destabilizing variants, altered interactions with Frizzled receptors and its deregulation in tumorigenesis

Amalesh Mondal[1,2], Debarati Paul[3], Shubhra Ghosh Dastidar[3], Tanima Saha[2] & Achintya Mohan Goswami[1]

Wnt1 is the first mammalian *Wnt* gene, which is discovered as proto-oncogene and in human the gene is located on the chromosome 12q13. Mutations in *Wnt1* are reported to be associated with various cancers and other human diseases. The structural and functional consequences of most of the non-synonymous SNPs (nsSNPs), present in the human *Wnt1* gene, are not known. In the present work, extensive bioinformatics analyses are used to screen 292 nsSNPs of *Wnt1* for predicting pathogenic and harmless polymorphisms. We have identified 10 highly deleterious nsSNPs among which 7 are located within the highly conserved areas. These 10 nsSNPs are also predicted to affect the post-translational modifications of Wnt1. Further, structure based stability analyses of these 10 highly deleterious nsSNPs revealed 8 variants as highly destabilizing. These 8 highly destabilizing variants were shown to have high BC score and high RMSIP score from normal mode analyses. Based on the deformation energies, obtained from the normal mode analyses, variants like G169A, G169S, G331R and G331S were found to be unstable. Molecular Dynamics (MD) simulations revealed structural stability and fluctuation of WT Wnt1 and its prioritized variants. RMSD remained fluctuating mostly between 4 and 5 Å and occasionally between 3.5 and 5.5 Å ranges. RMSF in the CTD region (residues 330–360) of the binding pocket were lower compared to that of WT. Studying the impacts of nsSNPs on the binding interface of Wnt1 and seven Frizzled receptors have predicted substitutions which can stabilize or destabilize the binding interface. We have found that Wnt1 and FZD8-CRD is the best docked complex in our study. MD simulation based analyses of wild type Wnt1-FZD8-CRD complex and the 8 prioritized variants revealed that RMSF was higher in the unstructured regions and RMSD remained fluctuating in the region of 5 Å ± 1 Å. We have also observed differential *Wnt1* gene expression pattern in normal, tumor and metastatic conditions across different tissues. *Wnt1* gene expression was significantly higher in metastatic tissues of lungs, colon and skin; and was significantly lower in metastatic tissues of breast, esophagus and kidney. We have also found that Wnt1 deregulation is associated with survival outcome in patients with gastric and breast cancer. Furthermore, these computationally screened highly deleterious nsSNPs of *Wnt1* can be analyzed in population based genetic studies and may help understand the Wnt1 associated diseases.

The Wnt family consists of secreted glycoprotein signaling molecules which play crucial roles in development and maintenance of many tissues[1]. The name Wnt, came from combination of two genes—*wg* (wingless) and *int-1* (*Wnt1*)[2]. In human, 19 *Wnt* genes were identified with different levels of sequence similarities among the Wnt proteins[3]. Among them, *Wnt1* was the first mammalian Wnt gene, discovered as proto-oncogene and it

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