Mathematical Methods in Physics

New exact wave solutions for Hirota equation  
*M Eslami, M A Mirzazadeh and A Neirameh*  
3–8

Analytical solution of population balance equation involving aggregation and breakage in terms of auxiliary equation method  
*Zehra Pinar, Abhishek Dutta, Guido Bény and Turgut Öziş*  
9–21

General Relativity and Gravitation

Finite escape fraction for ultrahigh energy collisions around Kerr naked singularity  
*Mandar Patil and Pankaj S Joshi*  
491–501

Ghost quintessence in fractal gravity  
*Habib Abedi and Mustafa Salti*  
503–516

Statistical Physics, Thermodynamics and Nonlinear Dynamical Systems

Stability analysis of fractional-order generalized chaotic susceptible–infected–recovered epidemic model and its synchronization using active control method  
*Sana P Ansari, Saurabh K Agrawal and Subir Das*  
23–32

Increased-order generalized synchronization of chaotic and hyperchaotic systems  
*K S Ojo, S T Ogunjo, A N Njah and I A Fuwape*  
33–45

Robust antisynchronization of chaos using sliding mode control strategy  
*Amit Mondal, Mitul Islam and Nurul Islam*  
47–67

Synchronization-optimized networks for coupled nearly identical oscillators and their structural analysis  
*Suman Acharyya and R E Amritkar*  
173–182

Coupled chaotic attractors and driving-induced bistability: A brief review  
*Manish Agrawal*  
183–192

Early signatures of regime shifts in complex dynamical systems  
*Indrani Bose and Mainak Pal*  
193–202

Control of partial synchronization in chaotic oscillators  
*R Banerjee, E Padmanaban and S K Dana*  
203–215

Preventing catastrophes in spatially extended systems through dynamic switching of random interactions  
*Anshul Choudhary, Vivek Kohar and Sudeshna Sinha*  
217–228
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chimera states in a population of identical oscillators under planar cross-coupling</td>
<td>C R Hens, A Mishra, P K Roy, A Sen and S K Dana</td>
<td>229–235</td>
</tr>
<tr>
<td>Suppression of oscillations in mean-field diffusion</td>
<td>Neeraj Kumar Kamal, Pooja Rani Sharma and Manish Dev Shrimali</td>
<td>237–247</td>
</tr>
<tr>
<td>Dynamic random links enhance diversity-induced coherence in strongly coupled neuronal systems</td>
<td>Neeraj Kumar Kamal and Sudeshna Sinha</td>
<td>249–256</td>
</tr>
<tr>
<td>Synchronization enhancement via an oscillatory bath in a network of self-excited cells</td>
<td>B R Nana Nbendjo, H G Enjieu Kadji and Hilda A Cerdeira</td>
<td>257–272</td>
</tr>
<tr>
<td>Coverage maximization under resource constraints using proliferating random walks</td>
<td>Sudipta Saha, Niloy Ganguly and Abhijit Guria</td>
<td>273–284</td>
</tr>
<tr>
<td>Importance of randomness in biological networks: A random matrix analysis</td>
<td>Sarika Jalan</td>
<td>285–293</td>
</tr>
<tr>
<td>Matrix models with Penner interaction inspired by interacting ribonucleic acid</td>
<td>Pradeep Bhadola and N Deo</td>
<td>295–308</td>
</tr>
<tr>
<td>Distribution of level spacing ratios using one- plus two-body random matrix ensembles</td>
<td>N D Chauda</td>
<td>309–316</td>
</tr>
<tr>
<td>Analysing correlations after the financial crisis of 2008 and multifractality in global financial time series</td>
<td>Sunil Kumar and Nivedita Deo</td>
<td>317–325</td>
</tr>
<tr>
<td>Dynamics of solitons in multicomponent long wave–short wave resonance interaction system</td>
<td>T Kanna, K Sakkaravarthi, M Vijayajayanthi and M Lakshman</td>
<td>327–338</td>
</tr>
<tr>
<td>Breathers and rogue waves: Demonstration with coupled nonlinear Schrödinger family of equations</td>
<td>N Vishnu Priya, M Senthilvelan and M Lakshman</td>
<td>339–352</td>
</tr>
<tr>
<td>Empirical questions for collective-behaviour modelling</td>
<td>Nicholas T Ouellette</td>
<td>353–363</td>
</tr>
<tr>
<td>Classification of periodic, chaotic and random sequences using approximate entropy and Lempel–Ziv complexity measures</td>
<td>Karthi Balasubramanian, Silpa S Nair and Nithin Nagaraj</td>
<td>365–372</td>
</tr>
<tr>
<td>Generalized virial theorem for the Liénard-type systems</td>
<td>José F Carriñena, Anindya Ghose Choudhury and Partha Guha</td>
<td>373–385</td>
</tr>
<tr>
<td>Effect of heat source on the growth of dendritic drying patterns</td>
<td>Kiran M Kolwankar, Pulkit Prakash, Shruthi Radhakrishnan, Swadhini Sahu, Aditya K Dharmadhikari, Jayashree A Dharmadhikari and Deepak Mathur</td>
<td>387–394</td>
</tr>
<tr>
<td>Thermalized solutions, statistical mechanics and turbulence: An overview of some recent results</td>
<td>Samriddhi Sankar Ray</td>
<td>395–407</td>
</tr>
<tr>
<td>Rolling motion in moving droplets</td>
<td>Sumesh P Thampi and Rama Govindarajan</td>
<td>409–421</td>
</tr>
</tbody>
</table>
Subject Index

State variable participation in the limit cycle of induction motor

_Krishnendu Chakrabarty and Urmila Kar_ 423–441

Non-linear dynamics in pulse combustor: A review

_Sirshendu Mondal, Achintya Mukhopadhyay and Swarnendu Sen_ 443–453

Building better oscillators using non-linear dynamics and pattern formation

_M C Cross, Eyal Kenig and John-Mark A Allen_ 455–471

Nonlinear dynamics of spin transfer nano-oscillators

_B Subash, V K Chandrasekar and M Lakshmanan_ 473–485

Oscillatory dynamics of a charged microbubble under ultrasound

_Thotreithem Hongray, B Ashok and J Balakrishnan_ 517–541

On symmetry groups of a 2D nonlinear diffusion equation with source

_Rodica Cimpoiasu_ 543–553

**Particle Physics**

Form factors and charge radii in a quantum chromodynamics-inspired potential model using variationally improved perturbation theory

_Bhaskar Jyoti Hazarika and D K Choudhury_ 69–85

Two-nucleon Hulthen-type interactions for few higher partial waves

_U Laha and J Bhoi_ 555–567

Thermalization and isotropization in heavy-ion collisions

_Michael Strickland_ 671–684

The initial stages of heavy-ion collisions in the colour glass condensate framework

_François Gelis_ 685–701

Hydrodynamic modelling for relativistic heavy-ion collisions at RHIC and LHC

_Huichao Song_ 703–715

Transport models for relativistic heavy-ion collisions at Relativistic Heavy Ion Collider and Large Hadron Collider

_Subrata Pal_ 717–730

Long-range correlations in high multiplicity pp and pA collisions

_Gunther Roland_ 731–746

Freeze-out dynamics in heavy-ion collisions: Recent advances

_Francesco Becattini_ 747–755

QCD critical point: The race is on

_Rajiv V Gaiwai_ 757–771

Experimental studies of the quantum chromodynamics phase diagram at the STAR experiment

_Lokesh Kumar and Declan Keane_ 773–786

Developments in lattice quantum chromodynamics for matter at high temperature and density

_Gert Aarts_ 787–799

Jet-quenching and correlations

_Fuqiang Wang_ 801–819

Jet modification in the next decade: A pedestrian outlook

_Abhishek Majumder_ 821–843

Photon and dilepton production in high-energy heavy-ion collisions

_Takao Sakaguchi_ 845–859
Electromagnetic probes of strongly interacting matter  
Jan-e Alam  861–880

Quarkonia at finite temperature in relativistic heavy-ion collisions  
Saumen Datta  881–899

Anomalous transport effects and possible environmental symmetry ‘violation’ in heavy-ion collisions  
Jinfeng Liao  901–926

Neutron stars as probes of extreme energy density matter  
Madappa Prakash  927–941

Nuclear Physics

Systematic of signature inversion in \((h_{11/2})_p \otimes (i_{13/2})_n\) for odd–odd nuclei in rare-earth nuclei  
Kawalpreet Kalra, Alpana Goel, Sukhjeet Singh, Sushil Kumar and A K Jain  87–99

On the momentum distribution of particles participating in nuclear stopping  
Mandeep Kaur and Suneel Kumar  101–111

Alpha decay properties of heavy and superheavy elements  
G M Carmel Vigila Bai and J Umai Parvathi  113–116

Evaluated activation cross-sections and intercomparison of the production parameters for the medically relevant radioisotopes \(^{64}\text{Cu}\) and \(^{86}\text{Y}\)  
A Sayed, A Elbinawil, M Al-Abyad, U Seddik and I I Bashter  569–579

Simulated nucleon–nucleon and nucleon–nucleus reactions in the frame of the cascade exciton model at high and intermediate energies  
A Abdel-Hafiez, Shaker El-Shater and M F Zaki  581–590

Characteristics of disintegration of different emulsion nuclei by relativistic \(^{28}\text{Si}\) nuclei at 3.7 A GeV  
Ashwini Kumar, A Prakash, Ashok Kumar, R K Jain and B K Singh  591–608

Electromagnetism, Optics, Acoustics, Heat Transfer, Classical Mechanics and Fluid Dynamics

Half-width at half-maximum, full-width at half-maximum analysis for resolution of asymmetrically apodized optical systems with slit apertures  
Andra Naresh Kumar Reddy and Dasari Karuna Sagar  117–126

The influence of atomic coherence and dipole–dipole interaction on entanglement of two qubits with nondegenerate two-photon transitions  
E K Bashkirov and M S Mastyugin  127–135

Plasma Physics

Dust-ion-acoustic Gardner double layers in a dusty plasma with two-temperature electrons  
M M Masud, I Tasnim and A A Mamun  137–144

Planar dust-acoustic waves in electron–positron–ion–dust plasmas with dust-size distribution under higher-order transverse perturbations  
Hong-Yan Wang and Kai-Biao Zhang  145–153
Condensed Matter Physics

Effect of doping of N and B atoms on thermoelectric properties of C₆₀ molecule  
Mojtaba Yaghobi and Fazel Ardeshir Larijani  
155–165

Impact of size and temperature on thermal expansion of nanomaterials  
Madan Singh and Mahipal Singh  
609–619

Influence of Cu doping on the structural, electrical and optical properties of ZnO  
Arindam Ghosh, Navnita Kumari and Ayon Bhattacharjee  
621–635

Electronic structure of Fe-based superconductors  
Kalobaran Maiti  
947–956

Understanding metal–insulator transition in sodium tungsten bronze  
Sanhita Paul and Satyabrata Raj  
957–966

Magnetoresistance stories of double perovskites  
Abhishek Nag and Sugata Ray  
967–975

Magnetocaloric effect in rare-earth intermetallics: Recent trends  
R Nirmala, A V Morozkin and S K Malik  
977–985

Site-specific doping, tunable dielectric properties and intrinsic paramagnetism in Mn-doped SrTiO₃  
D Choudhury  
987–997

Correlation effects driven by reduced dimensionality in magnetic surface alloys  
U Manju  
999–1009

Growth and photoemission spectroscopic studies of ultrathin noble metal films on graphite  
S K Mahatha and Krishnakumar S R Menon  
1011–1022

Quantum confinement effects in low-dimensional systems  
D Topwal  
1023–1032

A model for the direct-to-indirect band-gap transition in monolayer MoSe₂ under strain  
Ruma Das and Priya Mahadevan  
1033–1040

Mechanical behaviour of nanoparticles: Elasticity and plastic deformation mechanisms  
Celine Gerard and Laurent Pizzagalli  
1041–1048

Narrowing the size distribution of CdTe nanocrystals using digestive ripening  
Mona Mittal and Sameer Sapra  
1049–1054

Effect of transition metal dopants on the optical and magnetic properties of semiconductor nanocrystals  
Ranjani Viswanatha  
1055–1064

Recent advances in the preparation of nanocrystal solids  
Rekha Mahadev, Dev Kumar Thapa and Anshu Pandey  
1065–1071

High-capacity electrode materials for electrochemical energy storage: Role of nanoscale effects  
Jagjit Nanda, Surendra K Martha and Ramki Kalyanaraman  
1073–1086

Colloidal transparent conducting oxide nanocrystals: A new infrared plasmonic material  
Bharat Tandon, Aswathi Ashok and Angshuman Nag  
1087–1098

Carbon nanostructure composite for electromagnetic interference shielding  
Anupama Joshi and Suwarna Datar  
1099–1116
Subject Index

Geophysics, Astronomy and Astrophysics

Cylindrical and spherical dust-acoustic wave modulations in dusty plasmas with non-extensive distributions  
M Eghbali and B Farokhi  
637–651

Comparative studies of chemically synthesized and RF plasma-polymerized poly(o-toluidine)  
Shama Islam, G B V S Lakshmi, M Zulfequar, M Husain and Azher M Siddiqui  
653–665