# Indian Journal of Publication of the Indian Association

for the Cultivation of Science



## Indian Journal of Physics

Volume 99 · Number 1 · January 2025

#### Astrophysics, Atmospheric and Space Physics

Chauhan A, Arora R:

Evolution of steepened wave in interstellar gas clouds 1

Fid A

Stability of GMGHS charged thin shell wormhole in string theory 11

#### **Atomic and Molecular Physics**

Du H-W

Investigation on gaseous molecular alignment echoes induced by the intense phase-tunable terahertz pulses 19

#### **Biophysics**

Lotfipour H, Vayaghan NS, Hafezi M, Sobhani H:

Quantum investigation: propagation of entangled photons through cortex tissue 25

#### **Condensed Matter and Materials Physics**

Iram N, Dixit A, Al-Asbahi BA, Sharma R, Ahmad J, Ahmad Z, Barsoum I: First principles insight into magneto-electronic and optical properties of half-metallic-ferromagnetism binary GaN compound for spintronic applications 33

Telegin A, Stebliy M, Ognev A, Bessonov V, Batalov S:

Dynamics of skyrmion textures in thin ferrimagnetic films 4.

Yang F, Zhang X, Wang F, Liu L, Tang L, Lin J, Li Y:
Investigation of Seebeck coefficient in organic materials under a
magnetic field 55

Srivastava S, Pandey AK, Dixit CK:

Unveiling the mechanical properties and Grüneisen parameter of superconductors at high pressure: universality of EOSs 61

Mouhib M, Bri S, Mounir H, Belrhiti MD:

Some reentrant and compensation characteristics of a defective mixed-spin Ising bilayer graphene-like structure 75

Erkaboev UI, Gulyamov G, Dadamirzaev M, Rakhimov RG, Mirzaev JI, Sayidov NA, Negmatov UM:

The influence of light on transverse magnetoresistance oscillations in low-dimensional semiconductor structures 87

Khadka IB, Rai KB, Rokka D:

Low-power light irradiation based plasmonic photoresponse on quasi-freestanding monolayer/AuNPs hybrid system 95

Haddad N, Ayadi ZB, Khirouni K, Mir LE:

Optimizing ATO nanoparticles: synthesis and electrical properties for future electronic device applications 105

Saad Essaoud S, Ketfi ME, AI Azar S, Al-Reyahi AY, Mufleh A:
Computational study of structural parameters, magnetic properties,
half metallicity, and linear optical characteristics of transition-metal
oxide double perovskites: Ba<sub>2</sub>MnReO<sub>6</sub>, Ba<sub>2</sub>NiReO<sub>6</sub>, and Sr<sub>2</sub>MnReO<sub>6</sub>
117

Pal Majumder T, Halder A, Mandal RK:

A theoretical comparison of critical field of an antiferroelectric liquid crystals in Freedericksz transition 125

El-Saady AA, Farag AAM, Roushdy N, Abdel Basset DM, El-Nahass MM: In-depth dielectric study of bulk nanocrystalline  $\beta$ -H<sub>2</sub>Pc with different biasing and photovoltaic performance of  $\beta$ -H<sub>2</sub>Pc/p-Si solar cell under varied illumination 129

Rathee SP, Hooda SS:

EPR and superposition-model analysis of zero-field splitting parameters for Mn<sup>2+</sup> doped in ZnNbOF<sub>5</sub>.6(H<sub>2</sub>0) and CoNbOF<sub>5</sub>.6(H<sub>2</sub>0) single crystals 145

Liu S, Gao D, Wang L, Song W, Gao S, Zhu Y, Tan J:

Enhanced afterglow behavior of a new Eu<sup>2+</sup>: Sr<sub>2</sub>Al<sub>2</sub>SiO<sub>7</sub> green phosphor co-doped with different cations Nd<sup>3+</sup>, Dy<sup>3+</sup>, Ho<sup>3+</sup>, Tm<sup>3+</sup> and Yb<sup>3+</sup> 149

Duari PR, Das K:

MHD radiating flow in a hybrid solution of  $C_2H_6O_2-H_2O$  to disperse Ag–Al $_2O_3$  hybrid nanoparticles taking into account the effects of nanoparticle shapes 157

Grishanov EN, Popov IY:

Solvable model of moire superlattice in a magnetic field 171

Tsega M

Structural and optical properties of Mn-doped anatase-rutile  ${\rm TiO_2}$  nanoparticles 177

Goswami P, Tyagi UP:

Theoretical investigation of the periodic anderson hamiltonian of samarium hexaboride 191

### General and Interdisciplinary Physics

Zhu TT, Huang ML, Xu R:

The novel broadening bandwidth method to the  $\epsilon$ - $\mu$ -near-zero media for information manipulation and security device 205

Gnanasangeetha G:

Symmetry adapted basis functions for the transition metal complex tetracyanonickelate using the eigenfunction method 211

#### **Nonlinear Dynamics and Complex Systems**

Yang L, Gao B:

Multiple solitons solutions, lump solutions and rogue wave solutions of the complex cubic Ginzburg—Landau equation with the Hirota bilinear method 221

Sohaly MA, Mosaad Am, El-Metwally H:

Stochastic bulk density in the fire spread model 229

(Contents continued on inside backcover)

