

International Journal of
Modern Physics D

GRAVITATION • ASTROPHYSICS • COSMOLOGY

Volume 29 • Number 1 • January 2020

www.worldscientific.com/ijmpd/

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 1 (January 2020)

CONTENTS

Review Paper

- Gravity and quantum theory: Domains of conflict and contact 2030001
T. Padmanabhan

Research Papers

- Some models of holographic dark energy on the Randall–Sundrum brane and observational data 1950176
A. V. Astashenok and A. S. Tepliakov
- Anisotropic strange star inspired by Finsler geometry 2050001
S. R. Chowdhury, D. Deb, F. Rahaman, S. Ray and B. K. Guha
- Casimir effect around an Ellis wormhole 2050002
F. Sorge
- Holographic superconductor from a noncommutative-inspired anti-de Sitter–Einstein–Born–Infeld black hole 2050003
M. Maceda and S. Patiño-López
- Gravitational wave polarization in exponential forms of $f(R)$ gravity with coupling to matter 2050004
M. Haghshenas and T. Azizi
- Higgs vacuum decay in a braneworld 2050005
L. Cuspinera, R. Gregory, K. M. Marshall and I. G. Moss
- The system of Vlasov–Maxwell–Einstein-type equations and its nonrelativistic and weak relativistic limits 2050006
V. Vedenyapin, N. Fimin and V. Chechetkin
- Stability of charged rotating $(2 + 1)$ -dimensional wormholes 2050007
M. Sharif and F. Javed
- Covariant quantum-mechanical scattering via Stueckelberg–Horwitz–Piron theory 2050008
D. Momeni
- Superradiant stability of the Kerr black hole 2050009
W.-X. Chen and Z.-Y. Huang

Medha
केन्द्रीय पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University

International Journal of
Modern Physics D

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 2 • January 2020

www.worldscientific.com/ijmpd/

CONTENTS

Review Paper

- The primordial black hole formation criterion re-examined:
 Parametrisation, timing and the choice of window function 2030002
S. Young

Research Papers

- Induced gravity effect on inflationary parameters in a holographic
 cosmology 2050010
A. Bargach, F. Bargach, A. Errahmani and T. Ouali
- Heuristic derivation of Casimir effect in minimal length theories 2050011
*M. Blasone, G. Lambiase, G. G. Luciano, L. Petruzzello
 and F. Scardigli*
- Exploring the inflation of $F(R)$ gravity 2050012
T. Inagaki and H. Sakamoto
- Black hole magnetospheres in the Born-Infeld theory 2050013
H. Li and J. Wang
- Complexity analysis of dynamical spherically-symmetric dissipative
 self-gravitating objects in modified gravity 2050014
M. Zubair and H. Azmat
- Gravitational entropy of wormholes with exotic matter
 and in galactic halos 2050015
R. de C. Lima, J. A. C. Nogaes and S. H. Pereira
- Instability of some k -essence spacetimes 2050016
K. A. Bronnikov, J. C. Fabris and D. C. Rodrigues
- Mixing coproducts for theories with particle-dependent
 relativistic properties 2050017
G. Amelino-Camelia, M. Palmisano, M. Ronco and G. D'Amico

(Continued)

CONTENTS — (*Continued*)

Partition function of the Bose–Einstein condensate dark matter and the modified Gross–Pitaevskii equation <i>A. V. Nazarenko</i>	2050018
Aspects of gravitational wave/particle duality: Bulk torsion \leftrightarrow boundary gravity correspondence <i>R. K. Gupta, S. Kar and R. Nitish</i>	2050019

International Journal of
Modern Physics D

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 3 • February 2020

www.worldscientific.com/ijmpd/

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 3 (February 2020)

CONTENTS

Review Paper

- Strategies of motion under the black hole horizon 2030003
A. V. Toporensky and O. B. Zaslavskii

Research Papers

- Peeling property and asymptotic symmetries with a cosmological constant 2050020
V.-L. Saw and F. C. S. Thun
- Dynamics of charged and rotating NUT black holes in Rastall gravity 2050021
H. L. Prihadi, M. F. A. R. Sakti, G. Hikmawan and F. P. Zen
- Compact stars described by a charged model 2050022
J. Estevez-Delgado, R. Soto-Espitia, A. Cleary-Balderas and A. Taméz Murguía
- Cosmological evolution of Tsallis holographic dark energy model in LTB inhomogeneous gravity 2050023
A. A. Aly, M. A. Elrashied and M. M. Selim
- Cosmology of a generalised version of holographic dark energy in presence of bulk viscosity and its inflationary dynamics through slow roll parameters 2050024
G. Chakraborty and S. Chattopadhyay
- Black hole solutions in gravity with nonminimal derivative coupling and nonlinear material fields 2050025
M. M. Stetsko
- Could the black hole singularity be a field singularity? 2050026
G. Domènech, A. Naruko, M. Sasaki and C. Wetterich
- Weyl transformation: A dynamical degree of freedom in the light of Dirac's Large Number hypothesis 2050027
P. Paul, R. Sengupta and S. Ray

(Continued)

Madhura
केन्द्रीय पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University

CONTENTS — (*Continued*)

Induced gravitational waves in a general cosmological background <i>G. Domènech</i>	2050028
Scalar spectral index in the presence of Primordial Black Holes <i>G. Gupta, R. Sharma and T. R. Seshadri</i>	2050029

International Journal of Modern Physics **D**

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 4 • March 2020

www.worldscientific.com/ijmpd/

SPECIAL ISSUE

Mid-Frequency Gravitational Wave Detection and Sources

Editor

Wei-Tou Ni

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 4 (March 2020)

SPECIAL ISSUE

Mid-Frequency Gravitational Wave Detection and Sources

Editor

Wei-Tou Ni

CONTENTS

Foreword	1902005
SOGRO — Terrestrial full-tensor detector for mid-frequency gravitational waves <i>H. J. Paik, M. V. Moody and R. S. Norton</i>	1940001
INO: Interplanetary network of optical lattice clocks <i>T. Ebisuzaki, H. Katori, J. Makino, A. Noda, H. Shinkai and T. Tamagawa</i>	1940002
Torsion-Bar Antenna: A ground-based mid-frequency and low-frequency gravitational wave detector <i>T. Shimoda, S. Takano, C. P. Ooi, N. Aritomi, Y. Michimura, M. Ando and A. Shoda</i>	1940003
Orbit design for space atom-interferometer AIGSO <i>G. Wang, D. Gao, W.-T. Ni, J. Wang and M. Zhan</i>	1940004
ZAIGA: Zhaoshan long-baseline atom interferometer gravitation antenna <i>M.-S. Zhan, J. Wang, W.-T. Ni, D.-F. Gao, G. Wang, L.-X. He, R.-B. Li, L. Zhou, X. Chen, J.-Q. Zhong, B. Tang, Z.-W. Yao, L. Zhu, Z.-Y. Xiong, S.-B. Lu, G.-H. Yu, Q.-F. Cheng, M. Liu, Y.-R. Liang, P. Xu, X.-D. He, M. Ke, Z. Tan and J. Luo</i>	1940005
Orbit design and thruster requirement for various constant arm space mission concepts for gravitational-wave observation <i>G. Wang, W.-T. Ni and A.-M. Wu</i>	1940006
Astrodynamical middle-frequency interferometric gravitational wave observatory AMIGO: Mission concept and orbit design <i>W.-T. Ni, G. Wang and A.-M. Wu</i>	1940007

International Journal of

Modern Physics **D**

GRAVITATION • ASTROPHYSICS • COSMOLOGY

Volume 29 • Number 5 • April 2020

www.worldscientific.com/ijmpd/

INTERNATIONAL JOURNAL OF MODERN PHYSICS D
Vol. 29, No. 5 (April 2020)

CONTENTS

Review Paper

- Gravastar: An alternative to black hole 2030004
S. Ray, R. Sengupta and H. Nimesh

Research Papers

- Radial instability of trapping polytropic spheres 2050030
J. Hladík, C. Posada and Z. Stuchlík
- Extragalactic neutrinos as tracers of dark matter? 2050031
A. V. Penacchioni and O. Civitaresè
- Exact black hole solutions with nonlinear electrodynamic field 2050032
S. Yu and C. Gao
- Reconstruction of Cherenkov radiation signals from extensive air showers of cosmic rays using data of a wide field-of-view telescope 2050033
A. A. Ivanov, S. V. Matarkin and L. V. Timofeev
- On the gravitational entropy of accelerating black holes 2050034
S. Guha and S. Chakraborty
- Oscillating inflaton power-law cosmology in two-mode quantum optical states 2050035
M. Rathore, R. Dhayal and K. K. Venkataratnam
- Dynamics of collapsing stellar filament and exotic matter 2050036
R. Manzoor, M. Adeel and M. Saeed

International Journal of

Modern Physics **D**

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 6 • April 2020

www.worldscientific.com/ijmpd/

Central Library
University

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 6 (April 2020)

CONTENTS

Review Paper

- String theory on $AdS_3 \times M_7$ in the tensionless limit 2030005
G. Giribet

Research Papers

- Hubble inflation in Randall–Sundrum type II model 2050037
H. Abedi, A. M. Abbassi and S. Bahamonde
- Cosmological models based on relativity with a privileged frame 2050038
G. I. Burde
- Noncommutative Friedmann equations in effective LQC 2050039
L. R. Díaz-Barrón, A. Espinoza-García, S. Pérez-Payán and J. Socorro
- Surface charges toolkit for gravity 2050040
E. Frodden and D. Hidalgo
- Extended gravitational decoupling approach in $f(G)$ gravity 2050041
M. Sharif and S. Saba
- Friedmann equations for deformed entropic gravity 2050042
S. Kibaroglu and M. Senay
- GRB 161017A, the circumburst environment is an intermediate regime between the homogeneous interstellar medium and wind-type medium 2050043
Q.-Q. Zhou, S.-X. Yi, X.-L. Huang, S.-Q. Zhong, Y.-C. Zou, Q.-W. Tang and Z.-F. Chen

Madhum
केन्द्रीय पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University

International Journal of
Modern Physics D

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 7 • May 2020

www.worldscientific.com/ijmpd/

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 7 (May 2020)

CONTENTS

Review Paper

- Cosmic ray driven galactic winds 2030006
S. Recchia

Research Papers

- Exact solutions for compact stars with CFL quark matter 2050044
*L. S. Rocha, A. Bernardo, M. G. B. De Avellar
and J. E. Horvath*
- Casimir effect and Stefan–Boltzmann law at finite temperature in a
Friedmann–Robertson–Walker universe 2050045
A. F. Santos, S. C. Ulhoa and F. C. Khanna
- Multiscalar field models: Interaction potentials, wave functions and
cosmological solutions 2050046
S. Jamal
- An issue with the classification of the scalar–tensor theories of gravity 2050047
*I. Quiros, R. De Arcia, R. García-Salcedo, T. Gonzalez and
F. A. Horta-Rangel*
- The entropy evolution of a Schwarzschild–(Anti) de Sitter black hole 2050048
X.-Y. Wang, Y.-R. Wang and W.-B. Liu
- Possibility of studying the effects of the DM-electron scattering on the
cosmic microwave background based on simple assumptions 2050049
L. Chen
- Measurement of geophysical effects on the large-scale
gravitational-wave interferometer 2050050
A. V. Gusev, E. Majorana, V. N. Rudenko and V. D. Yushkin
- Revisiting the Israel junction conditions in Einstein–Cartan gravity 2050051
S. Khakshournia and R. Mansouri

Madhuni
पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University

International Journal of
Modern Physics D

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 8 • June 2020

www.worldscientific.com/ijmpd/

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 8 (June 2020)

CONTENTS

Research Papers

- The effect of dark matter on stars at the Galactic center:
The paradox of youth problem 2050052
E. Hassani, R. Pazhouhesh and H. Ebadi
- Geometrothermodynamics of black hole binary systems 2050053
H. Quevedo, M. N. Quevedo and A. Sánchez
- Bianchi type I cosmological model with perfect fluid
and string in $f(T)$ theory of gravitation 2050054
V. R. Chirde, S. P. Hatkar and S. D. Katore
- Study of warm inflationary models and their parameter
estimation from CMB 2050055
R. Arya and R. Rangarajan
- Impact of orbital orientations and radii on TianQin constellation
stability 2050056
Z. Tan, B. Ye and X. Zhang
- Quintessence and tachyon dark energy in interaction with dark
matter: Observational constraints and model selection 2050057
S. M. R. Micheletti
- Constraints on light dark matter particles using white dwarf stars 2050058
G. Panotopoulos and I. Lopes
- Quantum fluctuations and the Casimir effect 2050059
D. Chemisana, J. Giné and J. Madrid
- Solar system tests of a new class of $f(z)$ theory 2050060
J.-Y. Wang, C.-J. Feng, X.-H. Zhai and X.-Z. Li

Madhura
केन्द्रीय पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University

International Journal of

Modern Physics **D**

GRAVITATION • ASTROPHYSICS • COSMOLOGY

Volume 29 • Number 9 • July 2020

www.worldscientific.com/ijmpd/

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 9 (July 2020)

CONTENTS

Research Papers

- Measure of complexity for dynamical self-gravitating structures 2050061
Z. Yousof, M. Z. Bhatti and T. Naseer
- First analytical calculation of black hole shadow in McVittie metric 2050062
O. Yu. Tsupko and G. S. Bisnovatyi-Kogan
- Is a Bose–Einstein condensate a good candidate for dark matter?
A test with galaxy rotation curves 2050063
E. Castellanos, C. Escamilla–Rivera and J. Mastache
- An effective cosmological constant from an entropic
formulation of gravity 2050064
I. Díaz-Saldaña, J. C. López-Domínguez and M. Sabido
- Strong gravitational lensing of a 4-dimensional Einstein–Gauss–Bonnet
black hole in homogeneous plasma 2050065
X.-H. Jin, Y.-X. Gao and D.-J. Liu
- An interacting holographic dark energy model within
an induced gravity brane 2050066
*M.-H. Belkacemi, Z. Bouabdallaoui, M. Bouhmedi-López,
A. Errahmani and T. Ouali*
- Numerical study of toroidal magnetic field on the self-gravitating
protoplanetary disks 2050067
H. Ghanbarnejad and M. Ghasemnezhad
- Traversable wormholes with exponential shape function in modified
gravity and general relativity: A comparative study 2050068
G. C. Samanta, N. Godani and K. Bamba
- Kerr-AdS black hole behaviors from dark energy 2050069
*A. Belhaj, A. El Batali, W. El Hadri, M. A. Essebani,
M. B. Sedra and A. Segui*

Madhura
केन्द्रीय पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University

International Journal of

Modern Physics **D**

GRAVITATION • ASTROPHYSICS • COSMOLOGY

Volume 29 • Number 10 • July 2020

www.worldscientific.com/ijmpd/

INTERNATIONAL JOURNAL OF MODERN PHYSICS D
Vol. 29, No. 10 (July 2020)

CONTENTS

Review Paper

- Explorations of the infinite regions of spacetime 2030007
F. Beyer, J. Frauendiener and J. Hennig

Research Papers

- On deformations of classical mechanics due to Planck-scale physics 2050070
O. I. Chashchina, A. Sen and Z. K. Silagadze
- Galileon inflation field with three dark eras of the universe 2050071
A. I. Keskin
- Gravitational waves in modified Gauss–Bonnet gravity 2050072
T. Inagaki and M. Taniguchi
- Coordinate-time lapse function of FLRW accelerated expanding universe in dRGT massive gravity theory 2050073
H. Alatas, A. K. Falah, T. Wibowo, M. A. Qohhar and B. E. Gunara
- Perspectives of perihelion precession in torsion modified gravity 2050074
R. Nitish, R. K. Gupta and S. Kar
- Strange stars in energy–momentum-conserved $f(R, T)$ gravity 2050075
G. A. Carvalho, S. I. Dos Santos, Jr., P. H. R. S. Moraes and M. Malheiro
- Properties of a recent quantum extension of the Kruskal geometry 2050076
A. Ashtekar and J. Olmedo
- α -Attractors and reheating in a nonminimal inflationary model 2050077
R. Shojaei, K. Nozari and F. Darabi

International Journal of Modern Physics **D**

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 11 • August 2020

www.worldscientific.com/ijmpd/

SPECIAL ISSUE

Selected Papers of the Fifth Amazonian Symposium on Physics

Guest Editors

L. C. B. Crispino, S. R. Dolan, J. A. Font, C. A. R. Herdeiro and A. Higuchi

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 11 (August 2020)

SPECIAL ISSUE

Selected Papers of the Fifth Amazonian Symposium on Physics

*Guest Editors: L. C. B. Crispino, S. R. Dolan, J. A. Font,
C. A. R. Herdeiro and A. Higuchi*

CONTENTS

Preface	2002005
The October 10, 1912 solar eclipse expeditions and the first attempt to measure light bending by the Sun <i>L. C. B. Crispino</i>	2041001
Hadamard parametrix of the Feynman Green's function of a five-dimensional charged scalar field <i>V. Balakumar and E. Winstanley</i>	2041002
Quantum superposition of massive bodies <i>R. M. Wald</i>	2041003
Gaussian null coordinates, near-horizon geometry and conserved charges on the horizon of extremal nondilatonic black p -branes <i>M. Cvetič, P. J. Porfírio and A. Satz</i>	2041004
Shadows of charged rotating black holes: Kerr–Newman versus Kerr–Sen <i>S. V. M. C. B. Xavier, P. V. P. Cunha, L. C. B. Crispino and C. A. R. Herdeiro</i>	2041005
Scalar modes, spontaneous scalarization and circular null-geodesics of black holes in scalar-Gauss–Bonnet gravity <i>C. F. B. Macedo</i>	2041006
From fundamental physics to tests with compact objects in metric-affine theories of gravity <i>D. Rubiera-Garcia</i>	2041007

(Continued)

CONTENTS (Continued)

Scalar radiation emitted by a source around a spherically symmetric black hole <i>R. P. Bernar</i>	2041008
Particle creation by wormholes: A 1 + 1 model <i>G. Gurrea-Ysasi and G. J. Olmo</i>	2041009
Generating solutions of Ricci-based gravity theories from general relativity <i>E. Orazi</i>	2041010
Compact scalar field solutions in EiBI gravity <i>V. I. Afonso</i>	2041011
Role of gravity in particle physics: A unified approach <i>P. D. Alvarez, M. Valenzuela and J. Zanelli</i>	2041012
Stationary scalar and vector clouds around Kerr-Newman black holes <i>N. M. Santos and C. A. R. Herdeiro</i>	2041013
Tidal forces in the charged Hayward black hole spacetime <i>H. C. D. Lima Junior and L. C. B. Crispino</i>	2041014
Astrophysical implications of neutron star inspiral and coalescence <i>J. L. Friedman and N. Stergioulas</i>	2041015
Static black holes without spatial isometries: From AdS multipoles to electrovacuum scalarization <i>C. Herdeiro and E. Radu</i>	2041016
Does gravitational radiation impact the stellar habitable zone? <i>J. A. S. Lima, R. C. Santos, J. V. Cunha, F. E. Silva and C. E. Pellicer</i>	2041017
Analytical investigation of wave absorption by a rotating black hole analogue <i>L. A. Oliveira, C. L. Benone, A. L. Almeida and L. C. B. Crispino</i>	2041018
Compact objects in general relativity: From Buchdahl stars to quasiblack holes <i>J. P. S. Lemos and O. B. Zaslavskii</i>	2041019

International Journal of
Modern Physics D

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 12 • September 2020

www.worldscientific.com/ijmpd/

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 12 (September 2020)

CONTENTS

Research Papers

- Testing the weak cosmic censorship conjecture in torus-like black hole under charged scalar field 2050078
W. Hong, B. Mu and J. Tao
- Evolution of cosmological horizons of wormhole cosmology 2050079
S.-W. Kim
- Optical properties of Einstein–Born–Infeld gravastar models in plasmas 2050080
D. J. Cirilo-Lombardo and L. S. Ridao
- Thermodynamics and reentrant phase transition for logarithmic nonlinear charged black holes in massive gravity 2050081
S. R. Chaloshary, M. K. Zangeneh, S. Hajkhalili, A. Sheykhi and S. M. Zebarjad
- All static spherically symmetric anisotropic solutions for general relativistic polytropes 2050082
G. Abellán, P. Bargueño, E. Contreras and E. Fuenmayor
- Nonminimal dyons with regular gravitational, electric and axion fields 2050083
A. B. Balakin and D. E. Groshev
- Generalization of the Kaiser Rocket effect in general relativity in the wide-angle galaxy 2-point correlation function 2050085
D. Bertacca
- A path(-integral) toward non-perturbative effects in Hawking radiation 2050086
P. Chen, M. Sasaki and D.-h. Yeom
- Investigating inflation driven by DBI-essence scalar field 2050087
G. Chakraborty and S. Chattopadhyay

Madhura⁷
केन्द्रीय पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University

International Journal of
Modern Physics D

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 13 • October 2020

www.worldscientific.com/ijmpd/

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 13 (October 2020)

CONTENTS

SUBSCRIBED

Review Paper

- Beyond Einstein's General Relativity: Hybrid metric-Palatini gravity and curvature-matter couplings 2030008
T. Harko and F. S. N. Lobo

Research Papers

- Update constraints on neutrino mass and mass hierarchy in light of dark energy models 2050088
Z. Liu and H. Miao
- General properties of $f(R)$ gravity vacuum solutions 2050089
S. Capozziello, C. A. Mantica and L. G. Molinari
- Thermodynamical correspondence of $f(R)$ gravity in the Jordan and Einstein frames 2050090
G. G. L. Nashed, W. El Hanafy, S. D. Odintsov and V. K. Oikonomou
- Magnetized cosmological model with variable deceleration parameter 2050091
S. Tarai, F. Md. Esmacili, B. Mishra and S. K. Tripathy
- De Sitter scalar-spinor interaction in Minkowski limit 2050092
Y. Ahmadi
- The cosmological constant of emergent spacetime in the Newtonian approximation 2050093
J. C. Castro-Palacio, P. Fernández de Córdoba and J. M. Isidro
- Spinor field solutions in $F(B^2)$ modified Weyl gravity 2050094
V. Dzhunushaliev and V. Folomeev
- Particles dynamics around time conformal quintessential Schwarzschild black hole 2050095
I. A. Khan, A. S. Khan, S. Islam and F. Ali
- ### Erratum
- Dispersion of gravitational waves in cold spherical interstellar medium 2092001
D. Barta and M. Vasúth

Madhura
केन्द्रीय पुस्तकालय Central Library
सिक्किम विश्वविद्यालय
Sikkim University

International Journal of Modern Physics **D**

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 14 • October 2020

www.worldscientific.com/ijmpd/

SPECIAL ISSUE

**Selected Essays from the Annual Essay Competition of the Gravity
Research Foundation 2020 and Invited Papers
Dedicated to John D. Barrow (1952-2020)**

Editor

D. V. Ahluwalia

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 14 (October 2020)

SPECIAL ISSUE

Selected Essays from the Annual Essay Competition of the Gravity Research

Foundation 2020 and Invited Papers

Dedicated to John D. Barrow (1952-2020)

Editor

D. V. Ahluwalia

CONTENTS

Foreword	2002002
Announcement of the Awards for Essays for 2020	2002003
Abstracts of Award Winning and Honorable Mention Essays for 2020	2002004
Special Mention	
Maximum force and naked singularities in higher dimensions <i>J. D. Barrow</i>	2043008
Invited Review Papers	
Three puzzles in cosmology <i>S. D. Mathur</i>	2030013
The dark sector cosmology <i>E. Abdalla and A. Marins</i>	2030014
Equivalence of nonminimally coupled cosmologies by Noether symmetries <i>F. Bajardi and S. Capozziello</i>	2030015
Holographic Naturalness <i>A. Addazi</i>	2050084
Award-Winning Essays	
The noise of gravitons <i>M. Parikh, F. Wilczek and G. Zahariade</i>	2042001

(Continued)

केन्द्रीय पुस्तकालय / Central Library
सिक्किम विश्वविद्यालय
Sikkim University
2021

CONTENTS — (*Continued*)

Lorentzian quintessential inflation <i>D. Benisty and E. I. Guendelman</i>	2042002
A proof of the strong cosmic censorship conjecture <i>S. Hod</i>	2042003
Cosmological constant in coherent quantum gravity <i>C. Hogan</i>	2042004
Principle of equivalence at Planck scales and the zero-point length of spacetime <i>T. Padmanabhan</i>	2042005
Selected Honorable Mentions	
Gravitational fields of the magnetic-type <i>A. Danehkar</i>	2043001
Testing gravity with neutrinos: From classical to quantum regime <i>G. G. Luciano and L. Petruzzello</i>	2043002
Non-Abelian firewall <i>D. Singleton</i>	2043003
The hidden scalar Lagrangians within Horndeski theory <i>G. W. Horndeski</i>	2043004
Four metrics <i>M. Creutz</i>	2043005
Horizons 2020 <i>D. Grumiller, M. M. Sheikh-Jabbari and C. Zwikel</i>	2043006
Will gravitational waves discover the first extra-galactic planetary system? <i>C. Danielski and N. Tamanini</i>	2043007
Ghost problems from Pauli–Villars to fourth-order quantum gravity and their resolution <i>P. D. Mannheim</i>	2043009
Screening away the H_0 tension <i>J. Beltrán Jiménez, D. Bettoni and P. Brax</i>	2043010
How black holes store information in high-order correlations <i>C. Anastopoulos and K. Savvidou</i>	2043011

(*Continued*)

CONTENTS — (Continued)

Nature does not play Dice at the Planck scale <i>T. P. Singh</i>	2043012
There is no coincidence after all! <i>S. Das</i>	2043013
A symmetry principle for emergent spacetime <i>E. Shaghoulian</i>	2043014
Demystification of nonrelativistic theories in curved background <i>R. Banerjee</i>	2043015
You can see a clock running backwards in time <i>M. B. Paranjape</i>	2043016
Self-gravitating dark matter gets in shape <i>J. Wagner</i>	2043017
Analytic infinite derivative gravity, R^2 -like inflation, quantum gravity and CMB <i>A. S. Koshelev, K. S. Kumar and A. A. Starobinsky</i>	2043018
Information loss paradox revisited: Farewell firewall? <i>W.-C. Gan and F.-W. Shu</i>	2043019
Geometry creates inertia <i>A. Lahiri</i>	2043020
Predictivity lost, predictivity regained: A Miltonian cosmic censorship conjecture <i>R. Emparan</i>	2043021
A possible thermodynamic origin of the spacetime minimum length <i>T.-P. Liu, J. Pu, Y. Han and Q.-Q. Jiang</i>	2043022
Nonsingular black holes from charged dust collapse: A concrete mechanism to evade interior singularities in general relativity <i>R. Maier</i>	2043023
Quantum weak equivalence principle and the gravitational Casimir effect in superconductors <i>S. Bahamonde, M. Faizal, J. Q. Quach and R. A. Norte</i>	2043024
Resolving Hubble tension with the Milne model <i>R. G. Vishwakarma</i>	2043025

(Continued)

CONTENTS — (*Continued*)

Signatures of minimal length from Casimir–Polder forces with neutrons <i>F. Pinto</i>	2043026
Angle deficit and nonlocal gravitoelectromagnetism around a slowly spinning cosmic string <i>J. Boos</i>	2043027
Neutron stars as probes of dark matter <i>M. Á. Pérez-García and J. Silk</i>	2043028
Quasilocal conservation laws in cosmology: A first look <i>M. Oltean, H. B. Moghaddam and R. J. Epp</i>	2043029
Dark matter, dark energy and fundamental acceleration <i>D. Edmonds, D. Minic and T. Takeuchi</i>	2043030
From microscopic black hole entropy toward Hawking radiation <i>J. Nian and L. A. P. Zayas</i>	2043031
How close is our Λ CDM physical universe to de Sitter spacetime dS_4 ? <i>A. E. Fischer</i>	2043032
Announcement	
Announcement of the essay competition for 2021	2082001

International Journal of
Modern Physics D

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 15 • November 2020

www.worldscientific.com/ijmpd/

SUBSCRIBED

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 15 (November 2020)

CONTENTS

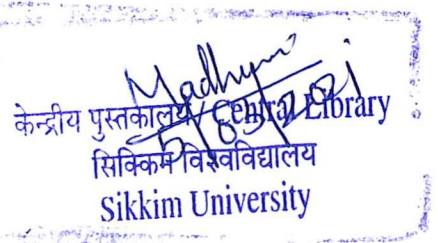
Review Papers

- The vecro hypothesis 2030009
S. D. Mathur
- On extended thermodynamics: From classical to the relativistic regime 2030010
J. F. Salazar and T. Zannias

Research Papers

- Transients from initial conditions based on Lagrangian perturbation theory in N -body simulations III: The case of Gadget-2 code 2050096
T. Tatekawa
- The logotropic dark fluid: Observational and thermodynamic constraints 2050097
A. Al Mamon and S. Saha
- Two-dimensional area and matter flux in the theory of causal fermion systems 2050098
E. Curiel, F. Finster and J. M. Isidro
- Role of collisional matter in the framework of extended teleparallel theory 2050099
M. Zeeshan, M. Zubair and R. Saleem
- Cosmological models with squared trace in modified gravity 2050100
B. Mishra, S. K. Tripathy and S. Ray
- Effects of Gauss–Bonnet entropy on thermodynamics of Kiselev black hole 2050101
A. Jawad, I. Siddique, I. P. Lobo and W. us Salam
- Inflation of universe by nonlinear electrodynamics 2050102
S. I. Kruglov

(Continued)



CONTENTS — (*Continued*)

Vacuum bosonic currents induced by a compactified cosmic string in dS background	2050103
<i>E. A. F. Bragança, E. R. B. de Mello and A. Mohammadi</i>	
Λ CDM as a Noether symmetry in cosmology	2050104
<i>D. Benisty, E. I. Guendelman, E. Nissimov and S. Pacheva</i>	
A model-independent constraint on the Hubble constant with gravitational waves from the Einstein Telescope	2050105
<i>S. Zhang, S. Cao, J. Zhang, T. Liu, Y. Liu, S. Geng and Y. Lian</i>	
Dark energy and neutrino mass from a transient vacuum particle pair model	2050106
<i>A. Rosencwaig</i>	
A black hole inside dark matter and the rotation curves of galaxies	2050107
<i>F. Haddad and N. Haddad</i>	
Phase transitions and entropy force of charged de Sitter black holes with cloud of string and quintessence	2050108
<i>Y. Ma, Y. Zhang, R. Zhao, S. Cao, T. Liu, S. Geng, Y. Liu and Y. Huang</i>	

International Journal of

Modern Physics **D**

GRAVITATION ■ ASTROPHYSICS ■ COSMOLOGY

Volume 29 • Number 16 • December 2020

www.worldscientific.com/ijmpd/

INTERNATIONAL JOURNAL OF MODERN PHYSICS D

Vol. 29, No. 16 (December 2020)

CONTENTS

Review Papers

- Building models of inflation in no-scale supergravity 2030011
*J. Ellis, M. A. G. García, N. Nagata, D. V. Nanopoulos,
 K. A. Olive and S. Verner*
- Black hole entropy from soft hair 2030012
M. J. Perry

Research Papers

- Seeing Relativity — III. Journeying within the Kerr metric toward
 the negative gravity region 2050109
A. Riazuelo
- Mass-spin relation of black holes obtained by twin high-frequency
 quasi-periodic oscillations 2050110
I. Z. Stefanov
- Three-dimensional slowly rotating black hole in
 Einstein-power-Maxwell theory 2050111
M. B. Tataryn and M. M. Stetsko
- Effective anisotropic stresses of the relic gravitons 2050112
M. Giovannini
- Deformed phase-space in supersymmetric Kantowski–Sachs model 2050113
A. Crespo-Hernández and E. A. Mena-Barboza
- A pure connection formulation with real fields for gravity 2050114
J. E. Rosales-Quintero
- Surface tension: Accelerated expansion, coincidence problem &
 Hubble tension 2050115
C. Ortiz

(Continued)

CONTENTS — (*Continued*)

Axial gravitational waves in Bianchi I universe <i>S. Guha and S. Datta</i>	2050116
Attractor inflationary solutions in braneworld scenario <i>S. Qummer, A. Jawad and M. Younas</i>	2050117
Nonsingular solution with anisotropic fluid in mini bang cosmology <i>S. Ray, A. K. Yadav, F. Rahaman and U. Debnath</i>	2050118
Quantum fluctuations and cosmological particle creation from oscillating massive scalar field in two-mode quantum optical states <i>M. Rathore, R. Dhayal and K. K. Venkataratnam</i>	2050119
On multifluid perturbations in scalar-tensor cosmology <i>J. Ntahompagaze, S. Sahlu, A. Abebe and M. R. Mbonye</i>	2050120
Circular motion and the innermost stable circular orbit for spinning particles around a charged Hayward black hole background <i>E. Larrañaga</i>	2050121
Cumulative author index	2099001