PHYSICAL REVIEW D™

For editorial and subscription correspondence, please see inside front cover
(ISSN: 1550-7998)

PERIODICALS

Postmaster send address changes to:

APS Subscription Services
P.O. Box 41
Annapolis Junction, MD 20701

THIRD SERIES, VOLUME 87, NUMBER 2 *CONTENTS* **D15 JANUARY 2013**

Physical Review D Editorial Policies and Practices iii
Physical Review D Information for Contributors vii

RAPID COMMUNICATIONS

Hints on halo evolution in scalar field dark matter models with galaxy observations *(5 pages)* . . . . . 021301(R)
Alma X. González-Morales, Alberto Diez-Tejedor, L. Arturo Ureña-López, and Octavio Valenzuela

ARTICLES

Search for relativistic magnetic monopoles with IceCube *(11 pages)* 022001
R. Abbasi *et al.* (IceCube Collaboration)

Search for gravitational waves from binary black hole inspiral, merger, and ringdown in LIGO-Virgo data from 2009–2010 *(15 pages)* 022002
J. Aasi *et al.* (LIGO Scientific Collaboration and Virgo Collaboration)

Quark-hybrid matter in the cores of massive neutron stars *(6 pages)* 023001
M. Orsaria, H. Rodrigues, F. Weber, and G. A. Contrera

Testing hadronic models of gamma ray production at the core of Cen A *(8 pages)* 023002
Jagdish C. Joshi and Nayantara Gupta

Calculations of electric fields for radio detection of ultrahigh energy particles *(12 pages)* 023003
Daniel García-Fernández, Jaime Alvarez-Muñiz, Washington R. Carvalho, Jr., Andrés Romero-Wolf, and Enrique Zas

Ensemble fluctuations of the flux and nuclear composition of ultrahigh energy cosmic ray nuclei *(10 pages)* 023004
Markus Ahlers, Luis A. Anchordoqui, and Andrew M. Taylor

Direct determination of expansion history using redshift distortions *(9 pages)* 023005
Yong-Seon Song

Latest observational constraints to the ghost dark energy model by using the Markov chain Monte Carlo approach *(12 pages)* 023006
Chao-Jun Feng, Xin-Zhou Li, and Xian-Yong Shen

Testing the space-time geometry around black hole candidates with the analysis of the broad Kα iron line *(12 pages)* 023007
Cosimo Bambi

Exploring the origin of the fine structures in the CMB temperature angular power spectrum *(12 pages)* 023008
Kohei Kumazaki, Kiyotomo Ichiki, Naoshi Sugiyama, and Joseph Silk

Observables and unobservables in dark energy cosmologies *(8 pages)* 023501
Luca Amendola, Martin Kunz, Mariele Motta, Ippocratis D. Saltas, and Ignacy Sawicki

Cosmological phase space analysis of the $F(X) - V(\phi)$ scalar field and bouncing solutions *(13 pages)* 023502
Josue De-Santiago, Jorge L. Cervantes-Cota, and David Wands

Exploring a simple sector of the Einstein-Maxwell landscape *(35 pages)* 023503
César Asensio and Antonio Seguí

Copyright 2013 American Physical Society

(Continued)

1550-7998(20130115)87:2;1-B

PHYSICAL REVIEW D **THIRD SERIES, VOLUME 87, NUMBER 2** **D15 JANUARY 2013**

Anisotropic power spectrum and bispectrum in the $f(\phi)F^2$ mechanism *(16 pages)* 023504
Nicola Bartolo, Sabino Matarrese, Marco Peloso, and Angelo Ricciardone

Limits on MeV dark matter from the effective number of neutrinos *(5 pages)* 023505
Chiu Man Ho and Robert J. Scherrer

Multiple cosmic collisions and the microwave background power spectrum *(19 pages)* 023506
Anthony Aguirre and Jonathan Kozaczuk

Constraints on primordial black holes as dark matter candidates from star formation *(8 pages)* 023507
Fabio Capela, Maxim Pshirkov, and Peter Tinyakov

Revisiting f(R) gravity models that reproduce ΛCDM expansion *(7 pages)* 023508
Jian-hua He and Bin Wang

125 GeV Higgs boson and electroweak phase transition model classes *(18 pages)* 023509
Daniel J. Chung, Andrew J. Long, and Lian-Tao Wang

Generalized models of unification of dark matter and dark energy *(8 pages)* 023510
Neven Čaplar and Hrvoje Štefančić

Baryon impact on weak lensing peaks and power spectrum: Low-bias statistics and self-calibration in future surveys *(18 pages)* 023511
Xiuyuan Yang, Jan M. Kratochvil, Kevin Huffenberger, Zoltán Haiman, and Morgan May

Nuclear uncertainties in the spin-dependent structure functions for direct dark matter detection *(19 pages)* 023512
D. G. Cerdeño, M. Fornasa, J.-H. Huh, and M. Peiró

Revisiting the cosmological coherent oscillation *(12 pages)* 023513
Masahiro Kawasaki, Naoya Kitajima, and Kazunori Nakayama

Ultra slow-roll inflation and the non-Gaussianity consistency relation *(10 pages)* 023514
Jérôme Martin, Hayato Motohashi, and Teruaki Suyama

Why is the running vacuum energy more benign than the holographic Ricci dark energy? *(7 pages)* 023515
Mariam Bouhmadi-López and Yaser Tavakoli

Isocurvature perturbations and non-Gaussianity of gravitationally produced nonthermal dark matter *(13 pages)* 023516
Daniel J. Chung and Hojin Yoo

Q-ball decay rates into gravitinos and quarks *(15 pages)* 023517
Masahiro Kawasaki and Masaki Yamada

Decoherence problem in an ekpyrotic phase *(8 pages)* 023518
Chien-Yao Tseng

Featuring the primordial power spectrum: New constraints on interrupted slow-roll from CMB and LRG data *(9 pages)* 023519
Micol Benetti, Stefania Pandolfi, Massimiliano Lattanzi, Matteo Martinelli, and Alessandro Melchiorri

Model independent tests of cosmic growth versus expansion *(4 pages)* 023520
Arman Shafieloo, Alex G. Kim, and Eric V. Linder

Nonlinearities in modified gravity cosmology. II. Impacts of modified gravity on the halo properties *(8 pages)* 023521
Youcai Zhang, Pengjie Zhang, Xiaohu Yang, and Weiguang Cui

Forecast constraints on cosmic strings from future CMB, pulsar timing, and gravitational wave direct detection experiments *(19 pages)* 023522
Sachiko Kuroyanagi, Koichi Miyamoto, Toyokazu Sekiguchi, Keitaro Takahashi, and Joseph Silk

UV completions of magnetic inelastic and Rayleigh dark matter for the Fermi Line(s) *(11 pages)* 023523
Neal Weiner and Itay Yavin

CMB dipoles and other low-order multipoles in the quasispherical Szekeres model *(13 pages)* 023524
Robert G. Buckley and Eric M. Schlegel

Scale-dependent bias with higher order primordial non-Gaussianity: Use of the integrated perturbation theory *(11 pages)* 023525
Shuichiro Yokoyama and Takahiko Matsubara

Effective conductance method for the primordial recombination spectrum *(14 pages)* 023526
Yacine Ali-Haïmoud

Cosmological constraints from moments of the thermal Sunyaev-Zel'dovich effect *(14 pages)* 023527
J. Colin Hill and Blake D. Sherwin

(Continued)

PHYSICAL REVIEW D **THIRD SERIES, VOLUME 87, NUMBER 2** **D15 JANUARY 2013**

Inflationary dynamics with a non-Abelian gauge field *(18 pages)* 023528
Kei-ichi Maeda and Kei Yamamoto

Probing the supersymmetric inflaton and dark matter link via the CMB, LHC, and XENON1T experiments *(15 pages)* 023529
Céline Bœhm, Jonathan Da Silva, Anupam Mazumdar, and Ernestas Pukartas

δN formalism *(10 pages)* 023530
Naonori S. Sugiyama, Eiichiro Komatsu, and Toshifumi Futamase

Topological ghosts and cosmological structure formation *(8 pages)* 023531
Nemanja Kaloper and McCullen Sandora

Probing dark energy anisotropy *(9 pages)* 023532
Stephen A. Appleby and Eric V. Linder

Mass ejection from the merger of binary neutron stars *(27 pages)* 024001
Kenta Hotokezaka, Kenta Kiuchi, Koutarou Kyutoku, Hirotada Okawa, Yu-ichiro Sekiguchi, Masaru Shibata, and Keisuke Taniguchi

Geometry of Lax pairs: Particle motion and Killing-Yano tensors *(13 pages)* 024002
Marco Cariglia, Valeri P. Frolov, Pavel Krtouš, and David Kubizňák

Structure formation in a nonlocally modified gravity model *(7 pages)* 024003
Sohyun Park and Scott Dodelson

Gravitational waves from black hole-neutron star binaries: Effective Fisher matrices and parameter estimation using higher harmonics *(20 pages)* 024004
Hee-Suk Cho, Evan Ochsner, Richard O'Shaughnessy, Chunglee Kim, and Chang-Hwan Lee

Graviton multipoint functions at the AdS boundary *(22 pages)* 024005
Ram Brustein and A. J. Medved

Archimedean-type force in a cosmic dark fluid. III. Big rip, little rip, and cyclic solutions *(16 pages)* 024006
Alexander B. Balakin and Vladimir V. Bochkarev

Circular orbits in the extreme Reissner-Nordstrøm dihole metric *(17 pages)* 024007
Andreas Wünsch, Thomas Müller, Daniel Weiskopf, and Günter Wunner

Spacetime near isolated and dynamical trapping horizons *(22 pages)* 024008
Ivan Booth

Suitability of hybrid gravitational waveforms for unequal-mass binaries *(11 pages)* 024009
Ilana MacDonald, Abdul H. Mroué, Harald P. Pfeiffer, Michael Boyle, Lawrence E. Kidder, Mark A. Scheel, Béla Szilágyi, and Nicholas W. Taylor

Impact of the second-order self-forces on the dephasing of the gravitational waves from quasicircular extreme mass-ratio inspirals *(14 pages)* 024010
Soichiro Isoyama, Ryuichi Fujita, Norichika Sago, Hideyuki Tagoshi, and Takahiro Tanaka

Retarded Green's function of a Vainshtein system and Galileon waves *(30 pages)* 024011
Yi-Zen Chu and Mark Trodden

Light paths of normal and phantom Einstein-Maxwell-dilaton black holes *(20 pages)* 024012
Mustapha Azreg-Aïnou

Quantum field theory in the flat chart of de Sitter space *(14 pages)* 024013
Yusuke Korai and Takahiro Tanaka

Axially symmetric static sources: A general framework and some analytical solutions *(10 pages)* 024014
L. Herrera, A. Di Prisco, J. Ibáñez, and J. Ospino

The parameterized post-Friedmann framework for theories of modified gravity: Concepts, formalism, and examples *(24 pages)* 024015
Tessa Baker, Pedro G. Ferreira, and Constantinos Skordis

Area-angular momentum-charge inequality for stable marginally outer trapped surfaces in 4D Einstein-Maxwell-dilaton theory *(8 pages)* 024016
Stoytcho Yazadjiev

Noncommutative gravity at second order via Seiberg-Witten map *(8 pages)* 024017
Paolo Aschieri, Leonardo Castellani, and Marija Dimitrijević

Quasinormal frequencies using the hidden conformal symmetry of the Schwarzschild black hole *(8 pages)* 024018
Yong-Wan Kim, Yun Soo Myung, and Young-Jai Park

(Continued)

PHYSICAL REVIEW D **THIRD SERIES, VOLUME 87, NUMBER 2** **D15 JANUARY 2013**

Formation of black holes in topologically massive gravity *(4 pages)* 024019
Ivo Sachs

General relativistic observables of the GRAIL mission *(25 pages)* 024020
Slava G. Turyshev, Viktor T. Toth, and Mikhail V. Sazhin

Growth of matter perturbations for realistic $F(R)$ models *(13 pages)* 024021
Antonio Jesús López-Revelles

Thermodynamics of the apparent horizon in infrared modified Horava-Lifshitz gravity *(7 pages)* 024022
Ahmad Sheykhi

Near horizon black holes in diverse dimensions and integrable models *(10 pages)* 024023
Anton Galajinsky

Signed magnification sums for general spherical lenses *(6 pages)* 024024
Naoki Tsukamoto and Tomohiro Harada

Dust thin shell limit of a thick wall *(4 pages)* 024025
I. V. Drobov and S. Ph. Tegai

Interacting scalar fields in the context of effective quantum gravity *(21 pages)* 024026
Artur R. Pietrykowski

General Kaluza-Klein black holes with all six independent charges in five-dimensional minimal supergravity *(11 pages)* 024027
Shinya Tomizawa and Shun'ya Mizoguchi

Dynamics of quadrupolar bodies in a Schwarzschild spacetime *(16 pages)* 024028
Donato Bini and Andrea Geralico

About matter and dark-energy domination eras in R^n gravity or lack thereof *(6 pages)* 024029
Luisa G. Jaime, Leonardo Patiño, and Marcelo Salgado

First law of mechanics for black hole binaries with spins *(16 pages)* 024030
Luc Blanchet, Alessandra Buonanno, and Alexandre Le Tiec

Local spacetime effects on gyroscope systems *(11 pages)* 024031
Mattias N. Wohlfarth and Christian Pfeifer

Wald-like formula for energy *(11 pages)* 024032
Aaron J. Amsel and Dan Gorbonos

Searching for gravitational waves from binary coalescence *(18 pages)* 024033
S. Babak, R. Biswas, P. R. Brady, D. A. Brown, K. Cannon, C. D. Capano, J. H. Clayton, T. Cokelaer, J. D. Creighton, T. Dent, A. Dietz, S. Fairhurst, N. Fotopoulos, G. González, C. Hanna, I. W. Harry, G. Jones, D. Keppel, D. J. McKechan, L. Pekowsky, S. Privitera, C. Robinson, A. C. Rodriguez, B. S. Sathyaprakash, A. S. Sengupta, M. Vallisneri, R. Vaulin, and A. J. Weinstein

Quasinormal modes of regular black holes *(8 pages)* 024034
Antonino Flachi and José P. Lemos

Degeneracy between mass and spin in black-hole-binary waveforms *(12 pages)* 024035
Emily Baird, Stephen Fairhurst, Mark Hannam, and Patricia Murphy

Analytic toy model for the innermost stable circular orbit shift *(4 pages)* 024036
Shahar Hod

Cosmic censorship: Formation of a shielding horizon around a fragile horizon *(4 pages)* 024037
Shahar Hod

Spin connection of twisted geometry *(5 pages)* 024038
Hal M. Haggard, Carlo Rovelli, Wolfgang Wieland, and Francesca Vidotto

Charged black holes on the Taub-bolt instanton *(9 pages)* 024039
Cristian Stelea, Ciprian Dariescu, and Marina-Aura Dariescu

Formation of scalar hair on Gauss-Bonnet solitons and black holes *(11 pages)* 024040
Yves Brihaye, Betti Hartmann, and Sardor Tojiev

Vacua and instantons of ghost-free massive gravity *(13 pages)* 024041
Minjoon Park and Lorenzo Sorbo

Semiclassical collapse with tachyon field and barotropic fluid *(12 pages)* 024042
Yaser Tavakoli, João Marto, Amir Hadi Ziaie, and Paulo Vargas Moniz

(Continued)

PHYSICAL REVIEW D **THIRD SERIES, VOLUME 87, NUMBER 2** **D15 JANUARY 2013**

Self-gravitational interaction in $z = 4$ Hořava-Lifshitz gravity *(7 pages)* 024043
Molin Liu, Junwang Lu, Yin Xu, Jianbo Lu, Yabo Wu, and Rumin Wang

Radiation processes in the vicinity of non-Schwarzschild and non-Kerr black holes *(11 pages)* 024044
R. A. Konoplya and A. Zhidenko

Tunneling during quantum collapse in AdS spacetime *(7 pages)* 024045
Cenalo Vaz and Kinjalk Lochan

Self-force on an arbitrarily coupled static scalar particle in a wormhole space-time *(6 pages)* 024046
Peter Taylor

Stationary rotating black holes in theories with gravitational Chern-Simons Lagrangian term *(18 pages)* 024047
L. Bonora, M. Cvitan, P. Dominis Prester, S. Pallua, and I. Smolić

Breathers and their interaction in the massless Gross-Neveu model *(19 pages)* 025001
Christian Fitzner and Michael Thies

Neutrino oscillations in the front form of Hamiltonian dynamics *(10 pages)* 025002
Stanisław D. Głazek and Arkadiusz P. Trawiński

Sensitivities of the IceCube DeepCore detector to signatures of low-mass dark matter in the Galactic halo *(11 pages)* 025003
Fei-Fan Lee, Guey-Lin Lin, and Yue-Lin Sming Tsai

Conjecture on hidden superconformal symmetry of $N = 4$ supergravity *(13 pages)* 025004
Sergio Ferrara, Renata Kallosh, and Antoine Van Proeyen

Fermionic current from topology and boundaries with applications to higher-dimensional models and nanophysics *(14 pages)* 025005
S. Bellucci and A. A. Saharian

Ricci curvature corrections to type II supergravity *(8 pages)* 025006
Mohammad R. Garousi

Dark matter and dark forces from a supersymmetric hidden sector *(24 pages)* 025007
S. Andreas, M. D. Goodsell, and A. Ringwald

Nonperturbative construction of massive Yang-Mills fields without the Higgs field *(11 pages)* 025008
Kei-Ichi Kondo

Cosmic Bose dark matter *(5 pages)* 025009
I. Rodríguez-Montoya, A. Pérez-Lorenzana, E. De La Cruz-Burelo, Y. Giraud-Héraud, and T. Matos

Instabilities of an anisotropically expanding non-Abelian plasma: 3D+3V discretized hard-loop simulations *(24 pages)* 025010
Maximilian Attems, Anton Rebhan, and Michael Strickland

Interactions between delta-like sources and potentials *(6 pages)* 025011
G. T. Camilo, F. A. Barone, and F. E. Barone

Tracing through scalar entanglement *(9 pages)* 025012
Christopher P. Herzog and Michael Spillane

Correspondence between Skyrmions in $2 + 1$ and $3 + 1$ dimensions *(8 pages)* 025013
Muneto Nitta

Generalized uncertainty principles and quantum field theory *(5 pages)* 025014
Viqar Husain, Dawood Kothawala, and Sanjeev S. Seahra

Continuity and Resurgence: Towards a continuum definition of the $\mathbb{CP}(N-1)$ model *(6 pages)* 025015
Gerald V. Dunne and Mithat Ünsal

Scattering approach to the dynamical Casimir effect *(15 pages)* 025016
Mohammad F. Maghrebi, Ramin Golestanian, and Mehran Kardar

Physical unitarity for a massive Yang-Mills theory without the Higgs field: A perturbative treatment *(17 pages)* 025017
Kei-Ichi Kondo, Kenta Suzuki, Hitoshi Fukamachi, Shogo Nishino, and Toru Shinohara

D=5 maximally supersymmetric Yang-Mills theory diverges at six loops *(18 pages)* 025018
Zvi Bern, John Joseph M. Carrasco, Lance J. Dixon, Michael R. Douglas, Matt von Hippel, and Henrik Johansson

Nonanticommutativity in the presence of a boundary *(7 pages)* 025019
Mir Faizal and Douglas J Smith

(Continued)

PHYSICAL REVIEW D **THIRD SERIES, VOLUME 87, NUMBER 2** **D15 JANUARY 2013**

Geometry of massless cosmic strings *(8 pages)* 025020
Maarten van de Meent

Rotating Casimir systems: Magnetic-field-enhanced perpetual motion, possible realization in doped nanotubes, and laws of thermodynamics *(19 pages)* 025021
M. N. Chernodub

Magnetically amplified light-shining-through-walls via virtual minicharged particles *(21 pages)* 025022
Babette Döbrich, Holger Gies, Norman Neitz, and Felix Karbstein

Lepton asymmetry growth in the symmetric phase of an electroweak plasma with hypermagnetic fields versus its washing out by sphalerons *(12 pages)* 025023
Maxim Dvornikov and Victor B. Semikoz

BPS $\mathbb{Z}_2$ monopoles and $\mathcal{N} = 2$ $SU(n)$ superconformal field theories on the Higgs branch *(12 pages)* 025024
Marco A. Kneipp and Paulo J. Liebgott

Simple models with non-Abelian moduli on topological defects *(4 pages)* 025025
M. Shifman

Super Landau models on odd cosets *(18 pages)* 025026
M. Goykhman, E. Ivanov, and S. Sidorov

Canonical quantization, path integral representations, and pseudoclassical description of massive Weyl neutrinos in external backgrounds *(9 pages)* 025027
Maxim Dvornikov and D. M. Gitman

Maxwell construction for scalar field theories with spontaneous symmetry breaking *(10 pages)* 025028
J. Alexandre and A. Tsapalis

Nonequilibrium thermodynamical inequivalence of quantum stress-energy and spin tensors *(15 pages)* 025029
F. Becattini and L. Tinti

Two-loop maximal unitarity with external masses *(18 pages)* 025030
Henrik Johansson, David A. Kosower, and Kasper J. Larsen

Vortex solutions of the Lifshitz-Chern-Simons theory *(6 pages)* 025031
N. Grandi, I. Salazar Landea, and G. A. Silva

Particle production and dissipation caused by the Kaluza-Klein tower *(5 pages)* 026001
Tomohiro Matsuda

Wilson line response of holographic superconductors in Gauss-Bonnet gravity *(9 pages)* 026002
Rong-Gen Cai, Li Li, Li-Fang Li, Hai-Qing Zhang, and Yun-Long Zhang

Worldsheet form factors in AdS/CFT *(18 pages)* 026004
Thomas Klose and Tristan McLoughlin

Electromagnetic signature in holographic plasma with B field *(11 pages)* 026005
Yanyan Bu

Correlation function of circular Wilson loop with two local operators and conformal invariance *(14 pages)* 026006
E. I. Buchbinder and A. A. Tseytlin

S-parameter, technimesons, and phase transitions in holographic tachyon DBI models *(15 pages)* 026007
Mikhail Goykhman and Andrei Parnachev

BRIEF REPORTS

Asymptotic cosmological behavior of scalar-torsion mode in Poincaré gauge theory *(5 pages)* 027301
Chao-Qiang Geng, Chung-Chi Lee, and Huan-Hsin Tseng

Demagnifying gravitational lenses toward hunting a clue of exotic matter and energy *(5 pages)* 027501
Takao Kitamura, Koki Nakajima, and Hideki Asada

Rotating hairy black hole and its microscopic entropy in three spacetime dimensions *(5 pages)* 027502
Francisco Correa, Aníbal Faúndez, and Cristián Martínez

Effective superpotential in the supersymmetric Chern-Simons theory with matter *(5 pages)* 027701
M. Gomes, A. C. Lehum, J. R. Nascimento, A. Yu. Petrov, and A. J. da Silva

Lorentz-covariant four-vector formalism for two-measure theory *(4 pages)* 027702
Eduardo Guendelman, Hitoshi Nishino, and Subhash Rajpoot

(Continued)

PHYSICAL REVIEW D **THIRD SERIES, VOLUME 87, NUMBER 2** **D15 JANUARY 2013**

Topological duality between vortices and planar Skyrmions in BPS theories with area-preserving diffeomorphism symmetries *(6 pages)* 027703
C. Adam, J. Sanchez-Guillen, A. Wereszczynski, and W. J. Zakrzewski

ERRATA

Erratum: Unremovable divergencies in four-dimensional electrodynamics localized on a domain wall [Phys. Rev. D **85**, 045036 (2012)] *(3 pages)* . . . . . 029901(E)
Mikhail N. Smolyakov

Erratum: Modulated reheating by a curvaton [Phys. Rev. D **85**, 123528 (2012)] *(1 page)* . . . . . 029902(E)
Ki-Young Choi and Osamu Seto