

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

Postmaster send address changes to:

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

THIRD SERIES, VOLUME 102, NUMBER 12	CONTENTS	D15 DECEMBER 2020
-------------------------------------	----------	-------------------

*The Table of Contents is a total listing of Parts A, B and C.
Part A consists of articles 121301–123536, Part B articles 123537–124061,
and Part C articles 124062–129901(E)*

PART A

RAPID COMMUNICATIONS

- | | |
|--|-----------|
| Cosmic perturbations, baryon asymmetry, and dark matter from the minimal supersymmetric standard model (8 pages) | 121301(R) |
| Keisuke Harigaya and Masaki Yamada | |
| Reconciling Hubble constant discrepancy from holographic dark energy (6 pages) | 121302(R) |
| Wei-Ming Dai, Yin-Zhe Ma, and Hong-Jian He | |
| Model-independent determination of the Migdal effect via photoabsorption (7 pages) | 121303(R) |
| C.-P. Liu, Chih-Pan Wu, Hsin-Chang Chi, and Jiunn-Wei Chen | |
| Revisiting the Ramond sector of the $\mathcal{N} = 1$ superconformal minimal models (7 pages) | 121701(R) |
| Chun Chen and Joseph Maciejko | |
| Chiral vortical effect: Black-hole versus flat-space derivation (6 pages) | 121702(R) |
| G. Yu. Prokhorov, O. V. Teryaev, and V. I. Zakharov | |
| Nonlinear duality-invariant conformal extension of Maxwell's equations (6 pages) | 121703(R) |
| Igor Bandos, Kurt Lechner, Dmitri Sorokin, and Paul K. Townsend | |

ARTICLES

- | | |
|---|--------|
| Cosmic ray spectrum from 250 TeV to 10 PeV using IceTop (18 pages) | 122001 |
| M. G. Aartsen <i>et al.</i> (IceCube Collaboration) | |
| Higher-order Hermite-Gauss modes as a robust flat beam in interferometric gravitational wave detectors (10 pages) | 122002 |
| Liu Tao, Anna Green, and Paul Fulda | |
| Practical test mass and suspension configuration for a cryogenic kilohertz gravitational wave detector (13 pages) | 122003 |
| J. Eichholz, N. A. Holland, V. B. Adya, J. V. van Heijningen, R. L. Ward, B. J. J. Slagmolen, D. E. McClelland, and D. J. Ottaway | |
| Gravitational-wave astronomy with a physical calibration model (12 pages) | 122004 |
| Ethan Payne, Colm Talbot, Paul D. Lasky, Eric Thrane, and Jeffrey S. Kissel | |
| Fisher formalism for anisotropic gravitational-wave background searches with pulsar timing arrays (18 pages) | 122005 |
| Yacine Ali-Haïmoud, Tristan L. Smith, and Chiara M. F. Mingarelli | |
| Detection of gravitational waves in circular particle accelerators (9 pages) | 122006 |
| Suvrat Rao, Marcus Brüggemann, and Jochen Liske | |
| Observation of the cosmic ray shadow of the Sun with the ANTARES neutrino telescope (7 pages) | 122007 |
| A. Albert <i>et al.</i> (ANTARES Collaboration) | |



Copyright 2020 American Physical Society

(Continued)



2470-0010(20201215)102:12*1;1-M



This paper was highlighted in the APS publication *Physics* (physics.aps.org).

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. D **90**, 00001 (2014).

Muonization of supernova matter (22 pages)	123001
Tobias Fischer, Gang Guo, Gabriel Martínez-Pinedo, Matthias Liebendörfer, and Anthony Mezzacappa	
Dark kinetic heating of neutron stars from contact interactions with relativistic targets (33 pages)	123002
Aniket Joglekar, Nirmal Raj, Philip Tanedo, and Hai-Bo Yu	
THESEUS insights into axionlike particles, dark photon, and sterile neutrino dark matter (10 pages)	123003
Charles Thorpe-Morgan, Denys Malyshev, Andrea Santangelo, Josef Jochum, Barbara Jäger, Manami Sasaki, and Sara Saeedi	
Estimating $\gamma\gamma$ absorption for ultrahigh-energy photons with lepton and hadron production (7 pages)	123004
Giorgio Galanti, Fulvio Piccinini, Marco Roncadelli, and Fabrizio Tavecchio	
Bounds on axionlike particles from the diffuse supernova flux (12 pages)	123005
Francesca Calore, Pierluca Carenza, Maurizio Giannotti, Joerg Jaeckel, and Alessandro Mirizzi	
Evidence of a simple dark sector from XENON1T excess (5 pages)	123006
Cheng-Wei Chiang and Bo-Qiang Lu	
Dense matter equation of state of a massive neutron star with antikaon condensation (14 pages)	123007
Vivek Baruah Thapa and Monika Sinha	
Using high-energy neutrinos as cosmic magnetometers (15 pages)	123008
Mauricio Bustamante and Irene Tamborra	
Spin and eccentricity evolution in triple systems: From the Lidov-Kozai interaction to the final merger of the inner binary (28 pages)	123009
Hang Yu, Sizheng Ma, Matthew Giesler, and Yanbei Chen	
Constraining black hole mimickers with gravitational wave observations (14 pages)	123010
Nathan K. Johnson-McDaniel, Arunava Mukherjee, Rahul Kashyap, Parameswaran Ajith, Walter Del Pozzo, and Salvatore Vitale	
Time-domain properties of electromagnetic signals in a dynamical axion background (20 pages)	123011
Peter Adshead, Patrick Draper, and Benjamin Lillard	
Fundamental physics with the diffuse supernova background neutrinos (19 pages)	123012
André de Gouvêa, Ivan Martinez-Soler, Yuber F. Perez-Gonzalez, and Manibrata Sen	
POEMMA's target-of-opportunity sensitivity to cosmic neutrino transient sources (34 pages)	123013
Tonia M. Venters, Mary Hall Reno, John F. Krizmanic, Luis A. Anchordoqui, Claire Guépin, and Angela V. Olinto	
Viscous evolution of a massive disk surrounding stellar-mass black holes in full general relativity (26 pages)	123014
Sho Fujibayashi, Masaru Shibata, Shinya Wanajo, Kenta Kiuchi, Koutarou Kyutoku, and Yuichiro Sekiguchi	
Impact of neutrino pair-production rates in core-collapse supernovae (16 pages)	123015
Aurore Betranhandy and Evan O'Connor	
Merger rate of black hole binaries from globular clusters: Theoretical error bars and comparison to gravitational wave data from GWTC-2 (23 pages)	123016
Fabio Antonini and Mark Gieles	
Can we constrain the extragalactic magnetic field from very high energy observations of GRB 190114C? (8 pages)	123017
T. A. Dzhatdoev, E. I. Podlesnyi, and I. A. Vaiman	
Quenching mechanisms of photon superradiance (10 pages)	123018
Diego Blas and Samuel J. Witte	
Ultrahigh-energy tau neutrino cross sections with GRAND and POEMMA (7 pages)	123019
Peter B. Denton and Yves Kini	
Using circular polarization to test the composition and dynamics of astrophysical particle accelerators (15 pages)	123020
Céline Boehm, Céline Degrande, Jakub Scholtz, and Aaron C. Vincent	
Impulsive radio events in quiet solar corona and axion quark nugget dark matter (21 pages)	123021
Shuailiang Ge, Md Shahriar Rahim Siddiqui, Ludovic Van Waerbeke, and Ariel Zhitnitsky	
Binary black hole mergers from LIGO/Virgo O1 and O2: Population inference combining confident and marginal events (24 pages)	123022
Javier Roulet, Tejaswi Venumadhav, Barak Zackay, Liang Dai, and Matias Zaldarriaga	

(Continued)



Constraining the onset density of the hadron-quark phase transition with gravitational-wave observations (34 pages)	123023
Sebastian Blacker, Niels-Uwe F. Bastian, Andreas Bauswein, David B. Blaschke, Tobias Fischer, Micaela Oertel, Theodoros Soultanis, and Stefan Typel	
Production of axionlike particles from photon conversions in large-scale solar magnetic fields (16 pages)	123024
Ersilia Guarini, Pierluca Carenza, Javier Galán, Maurizio Giannotti, and Alessandro Mirizzi	
Constraints from a many-body method on spin-independent dark matter scattering off electrons using data from germanium and xenon detectors (9 pages)	123025
Mukesh K. Pandey, Lakhwinder Singh, Chih-Pan Wu, Jiunn-Wei Chen, Hsin-Chang Chi, Chung-Chun Hsieh, C.-P. Liu, and Henry T. Wong	
Direct detection limits on heavy dark matter (5 pages)	123026
Michael Clark, Amanda Depoian, Bahaa Elshimy, Abigail Kopec, Rafael F. Lang, and Juehang Qin	
Establishing the significance of continuous gravitational-wave detections from known pulsars (19 pages)	123027
Maximiliano Isi, Simone Mastroianni, Matthew Pitkin, and Ornella Juliana Piccinni	
Equilibrium axisymmetric halo model for the Milky Way and its implications for direct and indirect dark matter searches (36 pages)	123028
Mihael Petač	
Exploring scalar-photon interactions in energetic astrophysical events (15 pages)	123029
Ankur Chaubey, Manoj K. Jaiswal, and Avijit K. Ganguly	
Analysis of the H_0 tension problem in the Universe with viscous dark fluid (12 pages)	123501
Emilio Elizalde, Martiros Khurshudyan, Sergei D. Odintsov, and Ratbay Myrzakulov	
Shedding light on dark matter-dark energy interactions (9 pages)	123502
Matteo Lucca and Deanna C. Hooper	
Effect of interacting dark energy on mass-temperature relation in galaxy clusters (16 pages)	123503
Mahdi Naseri and Javad T. Firouzjaee	
Stochastic nonattractor inflation (19 pages)	123504
Hassan Firouzjahi, Amin Nassiri-Rad, and Mahdiyar Noorbala	
Primordial perturbations and inflation in holographic cosmology (10 pages)	123505
Nicolas R. Bertini, Neven Bilić, and Davi C. Rodrigues	
Interpreting deep learning models for weak lensing (13 pages)	123506
José Manuel Zorrilla Matilla, Manasi Sharma, Daniel Hsu, and Zoltán Haiman	
Prospects for detection and application of the alignment of galaxies with the large-scale velocity field (9 pages)	123507
I. R. van Gemeren and N. E. Chisari	
Reconstructing k -essence: Unifying the attractor $n_S(N)$ and the swampland criteria (12 pages)	123508
Ramón Herrera	
Numerically modeling stochastic inflation in slow-roll and beyond (20 pages)	123509
Aritra De and Rafid Mahbub	
Turnaround radius in Λ CDM and dark matter cosmologies. II. The role of dynamical friction (10 pages)	123510
Antonino Del Popolo and Man Ho Chan	
Arguments against using h^{-1} Mpc units in observational cosmology (6 pages)	123511
Ariel G. Sánchez	
Gradient expansion formalism for magnetogenesis in the kinetic coupling model (20 pages)	123512
O. O. Sobol, A. V. Lysenko, E. V. Gorbar, and S. I. Vilchinskii	
Forecasting cosmological constraints from the weak lensing magnification of type Ia supernovae measured by the Nancy Grace Roman Space Telescope (10 pages)	123513
Zhongxu Zhai, Yun Wang, and Dan Scolnic	
Informational approach to cosmological parameter estimation (7 pages)	123514
Michelle Stephens, Sara Vannah, and Marcelo Gleiser	
Robustness of baryon acoustic oscillation constraints for early-Universe modifications of Λ CDM cosmology (21 pages)	123515
José Luis Bernal, Tristan L. Smith, Kimberly K. Boddy, and Marc Kamionkowski	

(Continued)



Dynamical model for primordial black holes (<i>11 pages</i>)	123516
F. Ruiz, C. Molina, and J. A. S. Lima	
 Galaxy power spectrum multipoles covariance in perturbation theory (<i>42 pages</i>)	123517
Digvijay Wadekar and Román Scoccimarro	
Nonlocal self-healing of Higgs inflation (<i>15 pages</i>)	123518
Alexey S. Koshelev and Anna Tokareva	
Qualitative dynamics of interacting vacuum cosmologies (<i>16 pages</i>)	123519
Chakkrit Kaenikhom, Phongsaphat Rangdee, Hooshyar Assadullahi, Burin Gumjudpai, Jascha A. Schewtschenko, and David Wands	
Redshift and gauge choice (<i>7 pages</i>)	123520
Harald Skarke	
Cosmological constraints from BOSS with analytic covariance matrices (<i>24 pages</i>)	123521
Digvijay Wadekar, Mikhail M. Ivanov, and Roman Scoccimarro	
Perturbation theory for modeling galaxy bias: Validation with simulations of the Dark Energy Survey (<i>18 pages</i>)	123522
S. Pandey <i>et al.</i> (DES Collaboration)	
Testing H_0 in acoustic dark energy models with <i>Planck</i> and ACT polarization data (<i>10 pages</i>)	123523
Meng-Xiang Lin, Wayne Hu, and Marco Raveri	
Bayesian analysis of LIGO-Virgo mergers: Primordial versus astrophysical black hole populations (<i>33 pages</i>)	123524
Alex Hall, Andrew D. Gow, and Christian T. Byrnes	
Barrow holographic dark energy (<i>5 pages</i>)	123525
Emmanuel N. Saridakis	
Evolution of axions in the presence of primordial magnetic fields (<i>9 pages</i>)	123526
Maxim Dvornikov and V. B. Semikoz	
Implications of gravitational-wave production from dark photon resonance to pulsar-timing observations and effective number of relativistic species (<i>12 pages</i>)	123527
Ryo Namba and Motoo Suzuki	
Constant roll inflation in multifield models (<i>11 pages</i>)	123528
Merce Guerrero, Diego Rubiera-Garcia, and Diego Sáez-Chillón Gómez	
Vainshtein screening in bimetric cosmology (<i>17 pages</i>)	123529
Marvin Lüben, Angnis Schmidt-May, and Juri Smirnov	
Warm and cold dark matter in a bouncing universe (<i>13 pages</i>)	123530
Changhong Li	
Fibre inflation and precision CMB data (<i>7 pages</i>)	123531
Sukannya Bhattacharya, Koushik Dutta, Mayukh Raj Gangopadhyay, Anshuman Maharana, and Kajal Singh	
Cosmography and flat Λ CDM tensions at high redshift (<i>14 pages</i>)	123532
Tao Yang, Aritra Banerjee, and Eoin Ó Colgáin	
Nanohertz gravitational waves from a null-energy-condition violation in the early universe (<i>11 pages</i>)	123533
Hiroaki W. H. Tahara and Tsutomu Kobayashi	
Spectator dark matter in nonstandard cosmologies (<i>18 pages</i>)	123534
Catarina Cosme and Tommi Tenkanen	
Exact solution to perturbative conformal cosmology in the recombination era (<i>39 pages</i>)	123535
Philip D. Mannheim	
Domain wall constraints on two-Higgs-doublet models with Z_2 symmetry (<i>13 pages</i>)	123536
Richard A. Battye, Apostolos Pilaftsis, and Dominic G. Viatic	

(Continued)



This paper was highlighted in the APS publication *Physics* (physics.aps.org).

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. D **90**, 00001 (2014).

PART B

Holographic dark energy, matter creation, and cosmic acceleration (<i>14 pages</i>)	123537
C. P. Singh and Ajay Kumar	
Fast computation of angular power spectra and covariances of high-resolution cosmic microwave background maps using the Toeplitz approximation (<i>11 pages</i>)	123538
Thibaut Louis, Sigurd Naess, Xavier Garrido, and Anthony Challinor	
No-boundary solutions are robust to quantum gravity corrections (<i>24 pages</i>)	123539
Caroline Jonas and Jean-Luc Lehnert	
Nonminimal Higgs inflation within holographic cosmology (<i>12 pages</i>)	123540
Aatifa Bargach, Farida Bargach, Mariam Bouhmadi-López, and Taoufik Ouali	
Blinded challenge for precision cosmology with large-scale structure: Results from effective field theory for the redshift-space galaxy power spectrum (<i>24 pages</i>)	123541
Takahiro Nishimichi, Guido D'Amico, Mikhail M. Ivanov, Leonardo Senatore, Marko Simonović, Masahiro Takada, Matias Zaldarriaga, and Pierre Zhang	
☞ Sampling-based inference of the primordial CMB and gravitational lensing (<i>20 pages</i>)	123542
Marius Millea, Ethan Anderes, and Benjamin D. Wandelt	
Cosmic expansion with matter creation and bulk viscosity (<i>12 pages</i>)	123543
Victor H. Cárdenas, Miguel Cruz, and Samuel Lepe	
Can dark neutrino interactions phase out the Hubble tension? (<i>11 pages</i>)	123544
Subhajit Ghosh, Rishi Khatri, and Tuhin S. Roy	
Accurate analytic model for the weak lensing convergence one-point probability distribution function and its autocovariance (<i>19 pages</i>)	123545
Leander Thiele, J. Colin Hill, and Kendrick M. Smith	
Position-dependent matter density probability distribution function (<i>15 pages</i>)	123546
Drew Jamieson and Marilena Loverde	
Gravitational wave background search by correlating multiple triangular detectors in the mHz band (<i>10 pages</i>)	123547
Naoki Seto	
Tachyon mimetic inflation as an instabilities-free model (<i>14 pages</i>)	123548
Narges Rashidi and Kouros Nozari	
Cross-bispectra constraints on modified gravity theories from the Nancy Grace Roman Space Telescope and the Rubin Observatory Legacy Survey of Space and Time (<i>20 pages</i>)	123549
Chen Heinrich and Olivier Doré	
Analytic post-Newtonian expansion of the energy and angular momentum radiated to infinity by eccentric-orbit nonspinning extreme-mass-ratio inspirals to the 19th order (<i>28 pages</i>)	124001
Christopher Munna	
Manifestly gauge-invariant cosmological perturbation theory from full loop quantum gravity (<i>28 pages</i>)	124002
Muxin Han, Haida Li, and Hongguang Liu	
Observable shape of black hole photon rings (<i>17 pages</i>)	124003
Samuel E. Gralla and Alexandru Lupasca	
The shape of the black hole photon ring: A precise test of strong-field general relativity (<i>20 pages</i>)	124004
Samuel E. Gralla, Alexandru Lupasca, and Daniel P. Marrone	
1 + 3 formulation of Newton's equations (<i>25 pages</i>)	124005
Quentin Vigneron	
Generation of rotating solutions in Einstein-scalar gravity (<i>13 pages</i>)	124006
Igor Bogush and Dmitri Gal'tsov	
Black holes in the long-range limit of torsion bigravity (<i>14 pages</i>)	124007
Vasilisa Nikiforova	
Radiative contribution to classical gravitational scattering at the third order in G (<i>11 pages</i>)	124008
Thibault Damour	

(Continued)



Dynamical bar-mode instability in spinning bosonic stars (17 pages)	124009
Fabrizio Di Giovanni, Nicolas Sanchis-Gual, Pablo Cerdá-Durán, Miguel Zilhão, Carlos Herdeiro, José A. Font, and Eugen Radu	
Numerical computations of next-to-leading order corrections in spinfoam large- j asymptotics (19 pages)	124010
Muxin Han, Zichang Huang, Hongguang Liu, and Dongxue Qu	
Exploring nonsingular black holes in gravitational perturbations (21 pages)	124011
Hang Liu (刘航), Chao Zhang (张超), Yungui Gong (龚云贵), Bin Wang (王斌), and Anzhong Wang (王安忠)	
Emission of photons near the horizon of Kerr-Sen black holes (12 pages)	124012
Ming Zhang and Jie Jiang	
Spinning up a time machine (6 pages)	124013
T. C. Ralph and Christopher Chang	
Addendum to “Numerical relativity injection analysis of signals from generically spinning intermediate mass black hole binaries in Advanced LIGO data” (4 pages)	124014
Koustav Chandra, V. Gayathri, Juan Calderón Bustillo, and Archana Pai	
Phase transition and microstructures of five-dimensional charged Gauss-Bonnet-AdS black holes in the grand canonical ensemble (14 pages)	124015
Run Zhou, Yu-Xiao Liu, and Shao-Wen Wei	
Entropic force between two horizons of a charged Gauss-Bonnet black hole in de Sitter spacetime (9 pages)	124016
Xiong-Ying Guo, Ying Gao, Huai-Fan Li, and Ren Zhao	
Disformal transformation of stationary and axisymmetric solutions in modified gravity (31 pages)	124017
Masato Minamitsuji	
Modified gravity and the black hole mass gap (16 pages)	124018
Maria C. Straight, Jeremy Sakstein, and Eric J. Baxter	
Acoustic black hole in Schwarzschild spacetime: Quasinormal modes, analogous Hawking radiation, and shadows (12 pages)	124019
Hong Guo, Hang Liu, Xiao-Mei Kuang, and Bin Wang	
Next-to-leading order spin-orbit effects in the equations of motion, energy loss, and phase evolution of binaries of compact bodies in the effective field theory approach (19 pages)	124020
Brian Pardo and Natália T. Maia	
Scalarized compact objects in a vector-tensor Horndeski gravity (9 pages)	124021
Y. Brihaye and Y. Verbin	
Nontrivial black hole solutions in $f(R)$ gravitational theory (19 pages)	124022
G. G. L. Nashed and S. Nojiri	
Gravitational spin-orbit and aligned spin ₁ -spin ₂ couplings through third-subleading post-Newtonian orders (30 pages)	124024
Andrea Antonelli, Chris Kavanagh, Mohammed Khalil, Jan Steinhoff, and Justin Vines	
Conservative tidal effects in compact binary systems to next-to-leading post-Minkowskian order (10 pages)	124025
Gregor Kälin, Zhengwen Liu, and Rafael A. Porto	
Analytically approximate solutions to higher derivative gravity (17 pages)	124026
S. N. Sajadi, Robert B. Mann, N. Riazi, and Saeed Fakhry	
Realism and causality. I. Pilot wave and retrocausal models as possible facilitators (16 pages)	124027
Eliahu Cohen, Marina Cortês, Avshalom Elitzur, and Lee Smolin	
Realism and causality. II. Retrocausality in energetic causal sets (19 pages)	124028
Eliahu Cohen, Marina Cortês, Avshalom C. Elitzur, and Lee Smolin	
Cosmography in $f(Q)$ gravity (10 pages)	124029
Sanjay Mandal, Deng Wang, and P. K. Sahoo	
Properties of the spherically symmetric polymer black holes (36 pages)	124030
Wen-Cong Gan, Nilton O. Santos, Fu-Wen Shu, and Anzhong Wang	
Invariant approach to Weyl’s unified field theory (10 pages)	124031
T. A. T. Sanomiya, I. P. Lobo, J. B. Formiga, F. Dahia, and C. Romero	
Kerr–Vaidya black holes (10 pages)	124032
Pravin Kumar Dahal and Daniel R. Terno	

(Continued)



Black hole perturbations and quasinormal modes in hybrid metric-Palatini gravity (<i>11 pages</i>)	124033
Che-Yu Chen, Yu-Hsien Kung, and Pisin Chen	
Z_2 -symmetric thick brane with a specific warp function (<i>10 pages</i>)	124034
S. H. Hendi, N. Riazi, and S. N. Sajadi	
Gravitational waveforms from the quasicircular inspiral of compact binaries in massive Brans-Dicke theory (<i>18 pages</i>)	124035
Tan Liu, Wen Zhao, and Yan Wang	
Fluxes and angular momentum (<i>16 pages</i>)	124036
Adam D. Helfer	
Parameter estimation of stellar-mass black hole binaries with LISA (<i>26 pages</i>)	124037
Alexandre Toubiana, Sylvain Marsat, Stanislav Babak, John Baker, and Tito Dal Canton	
Time-frequency analysis of gravitational wave data (<i>20 pages</i>)	124038
Neil J. Cornish	
Origin of the Reissner-Nordström–de Sitter instability (<i>16 pages</i>)	124039
Oscar J. C. Dias and Jorge E. Santos	
Asymptotically flat hairy black holes in massive bigravity (<i>31 pages</i>)	124040
Romain Gervalle and Mikhail S. Volkov	
Bouncing compact objects. II. Effective theory of a pulsating Planck star (<i>19 pages</i>)	124041
Jibril Ben Achour and Jean-Philippe Uzan	
Observational tests of the self-dual spacetime in loop quantum gravity (<i>10 pages</i>)	124042
Tao Zhu and Anzhong Wang	
Resolution of the colocation problem in satellite quantum tests of the universality of free fall (<i>13 pages</i>)	124043
Sina Loriani, Christian Schubert, Dennis Schlippert, Wolfgang Ertmer, Franck Pereira Dos Santos, Ernst Maria Rasel, Naceur Gaaloul, and Peter Wolf	
Covariant approach to the thermodynamic structure of a generic null surface (<i>18 pages</i>)	124044
Sumit Dey and Bibhas Ranjan Majhi	
Early evolutionary tracks of low-mass stellar objects in modified gravity (<i>11 pages</i>)	124045
Aneta Wojnar	
Quasinormal modes of dirty black holes in the effective theory of gravity with a third order curvature term (<i>10 pages</i>)	124046
Jerzy Matyjasek	
Near-horizon local instability and quantum thermality (<i>19 pages</i>)	124047
Surojit Dalui and Bibhas Ranjan Majhi	
 Gravitational wave lensing beyond general relativity: Birefringence, echoes, and shadows (<i>37 pages</i>)	124048
Jose María Ezquiaga and Miguel Zumalacárregui	
Nonlinearly ghost-free higher curvature gravity (<i>14 pages</i>)	124049
Katsuki Aoki	
Constraining gravitational-wave polarizations with Taiji (<i>8 pages</i>)	124050
Chang Liu, Wen-Hong Ruan, and Zong-Kuan Guo	
Echoes from a singularity (<i>9 pages</i>)	124051
Avijit Chowdhury and Narayan Banerjee	
Energy of gravitational radiation in the de Sitter universe at $\mathcal{I}^+$ and at a horizon (<i>14 pages</i>)	124052
Maciej Kolanowski and Jerzy Lewandowski	
Application of the third RIT binary black hole simulations catalog to parameter estimation of gravitational-wave signals from the LIGO-Virgo O1 and O2 observational runs (<i>15 pages</i>)	124053
James Healy, Carlos O. Lousto, Jacob Lange, and Richard O’Shaughnessy	
Constraining the spin parameter of near-extremal black holes using LISA (<i>29 pages</i>)	124054
Ollie Burke, Jonathan R. Gair, Joan Simón, and Matthew C. Edwards	
Projectively nonsingular horizons in Kerr-NUT–de Sitter spacetimes (<i>10 pages</i>)	124055
Jerzy Lewandowski and Maciej Ossowski	
Object picture of scalar field perturbation on Kerr black hole in scalar-Einstein-Gauss-Bonnet theory (<i>13 pages</i>)	124056
Shao-Jun Zhang, Bin Wang, Anzhong Wang, and Joel F. Saavedra	
Minimum-length Ricci scalar for null separated events (<i>19 pages</i>)	124057
Alessandro Pesci	

(Continued)



Multipole moments of compact objects with NUT charge: Theoretical and observational implications (22 pages)	124058
Sajal Mukherjee and Sumanta Chakraborty	
Screening anisotropy via energy-momentum squared gravity: Λ CDM model with hidden anisotropy (11 pages)	124059
Özgür Akarsu, John D. Barrow, and N. Merve Uzun	
Canonical loop quantization of the lowest-order projectable Horava gravity (8 pages)	124060
Xiangdong Zhang, Jinsong Yang, and Yongge Ma	
Supertranslation transition between quasilocal black holes (17 pages)	124061
Amit Ghosh, Avirup Ghosh, and Pritam Nanda	

PART C

Cosmological perturbation theory with matter time (15 pages)	124062
Viqar Husain and Mustafa Saeed	
General relativistic effects on Hill stability of multibody systems: Stability of three-body systems containing a massive black hole (16 pages)	124063
Haruka Suzuki, Yusuke Nakamura, and Shoichi Yamada	
Lie point symmetries of near-horizon geometry equation (6 pages)	124064
E. Buk, J. Lewandowski, and A. Szereszewski	
Gravitational Higgs mechanism and resulting observational effects (9 pages)	124065
Verena Krall, Andrew Coates, and Kostas D. Kokkotas	
Universal criticality of thermodynamic curvatures for charged AdS black holes (10 pages)	124066
Seyed Ali Hosseini Mansoori, Morteza Rafiee, and Shao-Wen Wei	
Spike behavior in the approach to spacetime singularities (13 pages)	124067
David Garfinkle and Frans Pretorius	
Non-Abelian wormholes threaded by a Yang-Mills-Higgs field in the BPS limit (10 pages)	124068
Xiao Yan Chew and Kok-Geng Lim	
Assessing and marginalizing over compact binary coalescence waveform systematics with RIFT (8 pages)	124069
A. Z. Jan, A. B. Yelkar, J. Lange, and R. O'Shaughnessy	
Binary black hole spectroscopy: A no-hair test of GW190814 and GW190412 (8 pages)	124070
Collin D. Capano and Alexander H. Nitz	
Testing general relativity with x-ray reflection spectroscopy: The Konoplya-Rezzolla-Zhidenko parametrization (14 pages)	124071
Sourabh Nampalliwar, Shuo Xin, Shubham Srivastava, Askar B. Abdikamalov, Dmitry Ayzenberg, Cosimo Bambi, Thomas Dauser, Javier A. García, and Ashutosh Tripathi	
New rotating black holes in nonlinear Maxwell $f(\mathcal{R})$ gravity (10 pages)	124072
G. G. L. Nashed and Emmanuel N. Saridakis	
Disintegration and expansion of wormholes (5 pages)	124073
I. D. Novikov, D. I. Novikov, and S. V. Repin	
Hamiltonian for tidal interactions in compact binary systems to next-to-next-to-leading post-Newtonian order (10 pages)	124074
Quentin Henry, Guillaume Faye, and Luc Blanchet	
Extended-body motion in black hole spacetimes: What is possible? (21 pages)	124075
Abraham I. Harte	
Convergence and efficiency of different methods to compute the diffraction integral for gravitational lensing of gravitational waves (15 pages)	124076
Xiao Guo and Youjun Lu	
Black hole-neutron star coalescence: Effects of the neutron star spin on jet launching and dynamical ejecta mass (16 pages)	124077
Milton Ruiz, Vasileios Paschalidis, Antonios Tsokaros, and Stuart L. Shapiro	
Test particles dynamics around deformed Reissner-Nordström black hole (17 pages)	124078
Ashfaque Hussain Bokhari, Javlon Rayimbaev, and Bobomurat Ahmedov	
Stable bound orbits in black lens backgrounds (14 pages)	124079
Shinya Tomizawa and Takahisa Igata	

(Continued)



CONTENTS - *Continued*

PHYSICAL REVIEW D

THIRD SERIES, VOLUME 102, NUMBER 12

D15 DECEMBER 2020

Background independent field quantization with sequences of gravity-coupled approximants (27 pages)	125001
Maximilian Becker and Martin Reuter	
Accelerating solitons (30 pages)	125002
Ilarion V. Melnikov, Constantinos Papageorgakis, and Andrew B. Royston	
Hamiltonian constraints and unfix gauge symmetry (16 pages)	125003
V. A. Abakumova and S. L. Lyakhovich	
Steinmann relations and the wavefunction of the Universe (10 pages)	125004
Paolo Benincasa, Andrew J. McLeod, and Cristian Vergu	
Diffeomorphism invariance demands conformal anomalies (10 pages)	125005
Ken-ji Hamada	
Stokes phenomenon and Hawking radiation (13 pages)	125006
Cesim K. Dumlu	
Seven-point conformal blocks in the extended snowflake channel and beyond (51 pages)	125007
Jean-François Fortin, Wen-Jie Ma, and Witold Skiba	
Entanglement degradation of cavity modes due to the dynamical Casimir effect (14 pages)	125008
Nicolás F. Del Grosso, Fernando C. Lombardo, and Paula I. Villar	
Hidden conformal invariance of scalar effective field theories (7 pages)	125009
Clifford Cheung, James Mangan, and Chia-Hsien Shen	
Proper scalar product for tachyon representations in configuration space (6 pages)	125010
F. F. López-Ruiz, J. Guerrero, and V. Aldaya	
Perturbative proximity between supersymmetric and nonsupersymmetric theories (8 pages)	125011
Mikhail Shifman	
Relativistic bands in the discrete spectrum of created particles in an oscillating cavity (9 pages)	125012
Danilo T. Alves, Edney R. Granhen, João Paulo da S. Alves, and Williams A. Lima	
Analytic constraints on the energy-momentum tensor in conformal field theories (15 pages)	125013
Cédric Lorcé and Peter Lowdon	
Gravitational contact interactions and the physical equivalence of Weyl transformations in effective field theory (10 pages)	125014
Christopher T. Hill and Graham G. Ross	
1/N expansion for stochastic fields in de Sitter spacetime (9 pages)	125015
G. Moreau and J. Serreau	
Spectral functions in the ϕ^4 -theory from the spectral Dyson-Schwinger equations (22 pages)	125016
Jan Horak, Jan M. Pawłowski, and Nicolas Wink	
Exact one-loop false vacuum decay rate (16 pages)	125017
Victor Guada and Miha Nemevšek	
Hierarchy of supersymmetric higher spin connections (12 pages)	125018
I. L. Buchbinder, S. James Gates, and K. Koutrolikos	
Motion induced by asymmetric excitation of the quantum vacuum (7 pages)	125019
Jeferson Danilo L. Silva, Alessandra N. Braga, Anderson L. C. Rego, and Danilo T. Alves	
Quantum radiation in dielectric media with dispersion and dissipation (8 pages)	125020
Sascha Lang, Ralf Schützhold, and William G. Unruh	
Wavelet regularization of Euclidean QED (20 pages)	125021
Mikhail V. Altaisky and Robin Raj	
Schrödinger evolution of the Hawking state (10 pages)	125022
Steven B. Giddings	
Positivity bounds and the massless spin-2 pole (34 pages)	125023
Lasma Alberte, Claudia de Rham, Sumer Jaitly, and Andrew J. Tolley	
Multicritical Landau-Potts field theory (12 pages)	125024
A. Codello, M. Safari, G. P. Vacca, and O. Zanusso	
One-to-one correspondence between entanglement mechanics and black hole thermodynamics (25 pages)	125025
S. Mahesh Chandran and S. Shankaranarayanan	

(Continued)



This paper was highlighted in the APS publication *Physics* (physics.aps.org).

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. D **90**, 00001 (2014).

CONTENTS - *Continued*

PHYSICAL REVIEW D

THIRD SERIES, VOLUME 102, NUMBER 12

D15 DECEMBER 2020

Bandlimited entanglement harvesting (13 pages)	125026
Laura J. Henderson and Nicolas C. Menicucci	
Geometric recursion from polytope triangulations and twisted homology (8 pages)	125027
Nikhil Kalyanapuram	
Spin-vorticity coupling for massive vector mesons (10 pages)	125028
Joseph I. Kapusta, Ernal Rrapaj, and Serge Rudaz	
General-relativistic spin system (18 pages)	125029
Danilo Artigas, Jakub Bilski, Sean Crowe, Jakub Mielczarek, and Tomasz Trzeńniewski	
Discrete spacetime symmetries and particle mixing in non-Hermitian scalar quantum field theories (20 pages)	125030
Jean Alexandre, John Ellis, and Peter Millington	
Dark matter of any spin: An effective field theory and applications (21 pages)	125031
Juan C. Criado, Niko Koivunen, Martti Raidal, and Hardi Veermäe	
Two-loop photon self-energy in pseudoquantum electrodynamics in the presence of a conducting surface (17 pages)	125032
Danilo C. Pedrelli, Danilo T. Alves, and Van Sérgio Alves	
Charging non-Abelian Higgs theories (9 pages)	125033
Oleg Antipin, Jahmall Bersini, Francesco Sannino, Zhi-Wei Wang, and Chen Zhang	
From 3D dualities to hadron physics (18 pages)	125034
Naoto Kan, Ryuichiro Kitano, Shimon Yankielowicz, and Ryo Yokokura	
Method to compute the stress-energy tensor for a quantized scalar field when a black hole forms from the collapse of a null shell (26 pages)	125035
Paul R. Anderson, Shohreh Gholizadeh Siahmazgi, Raymond D. Clark, and Alessandro Fabbri	
Bound state scattering simplified (16 pages)	126001
M. de Leeuw, B. Eden, and A. Sfondrini	
Old dualities and new anomalies (26 pages)	126002
Roberto Bonezzi, Felipe Díaz-Jaramillo, and Olaf Hohm	
Criticality from Einstein-Maxwell-dilaton holography at finite temperature and density (31 pages)	126003
Alfonso Ballon-Bayona, Henrique Boschi-Filho, Eduardo Folco Capossoli, and Diego M. Rodrigues	
Perelomov-type coherent states of $SO(D+1)$ in all-dimensional loop quantum gravity (17 pages)	126004
Gaoping Long and Norbert Bodendorfer	
Winding up a finite size holographic superconducting ring beyond Kibble-Zurek mechanism (5 pages)	126005
Chuan-Yin Xia and Hua-Bi Zeng	
Echoes in the Kerr/CFT correspondence (18 pages)	126006
Ramit Dey and Niayesh Afshordi	
☞ Codimension-two holography for wedges (28 pages)	126007
Ibrahim Akal, Yuya Kusuki, Tadashi Takayanagi, and Zixia Wei	
Revisiting the AdS boson stars: The mass-charge relations (34 pages)	126008
Hai-Shan Liu, Hong Lü, and Yi Pang	
Holographic two-point functions in the pseudoconformal universe (17 pages)	126009
Mariana Carrillo González, Kurt Hinterbichler, James Stokes, and Mark Trodden	
Stringlike theory in three dimensions and massive higher spins (6 pages)	126010
Evgeny Skvortsov, Tung Tran, and Mirian Tsulaia	
Associative realizations of the extended Snyder model (9 pages)	126011
S. Meljanac and S. Mignemi	
String Regge trajectories in de Sitter space and implications for inflation (6 pages)	126012
Toshifumi Noumi, Toshiaki Takeuchi, and Siyi Zhou	
Holographic superconductor induced by charge density waves (7 pages)	126013
Yi Ling, Peng Liu, and Meng-He Wu	
Pion quasiparticles and QCD phase transitions at finite temperature and isospin density from holography (20 pages)	126014
Xuanmin Cao, Hui Liu, and Danning Li	

(Continued)



This paper was highlighted in the APS publication *Physics* (physics.aps.org).

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. D **90**, 00001 (2014).

CONTENTS - *Continued*

PHYSICAL REVIEW D

THIRD SERIES, VOLUME 102, NUMBER 12

D15 DECEMBER 2020

Self-supporting wormholes with a massive vector field (<i>11 pages</i>)	126016
Ankit Anand and Prasanta K. Tripathy	
Ehlers transformations as EM duality in the double copy (<i>15 pages</i>)	126017
A. Banerjee, E. Ó Colgáin, J. A. Rosabal, and H. Yavartanoo	
Quantum fields, geometric fluctuations, and the structure of spacetime (<i>5 pages</i>)	126018
S. Carlip, R. A. Mosna, and J. P. M. Pitelli	
Thermodynamical property of entanglement entropy and deconfinement phase transition (<i>15 pages</i>)	126019
Mitsutoshi Fujita, Song He, and Yuan Sun	
Loop celestial amplitudes for gauge theory and gravity (<i>22 pages</i>)	126020
Soner Albayrak, Chandramouli Chowdhury, and Savan Kharel	
1/2-BPS membrane instantons in $\text{AdS}_4 \times S^7/Z_k$ (<i>6 pages</i>)	126021
Jaemo Park and Hyeonjoon Shin	
Mixed state entanglement measures as probe for confinement (<i>24 pages</i>)	126022
Parul Jain and Subhash Mahapatra	
Determination of dynamical exponents of graphene at quantum critical point by holography (<i>9 pages</i>)	126023
Geunho Song, Yunseok Seo, and Sang-Jin Sin	
Towards a reduced phase space quantization in loop quantum cosmology with an inflationary potential (<i>23 pages</i>)	126024
Kristina Giesel, Bao-Fei Li, and Parampreet Singh	
Primordial scalar power spectrum from the hybrid approach in loop cosmologies (<i>16 pages</i>)	126025
Bao-Fei Li, Javier Olmedo, Parampreet Singh, and Anzhong Wang	
Entanglement measures for nonconformal D-branes (<i>14 pages</i>)	126026
Arindam Lala	
Loop corrections to celestial amplitudes (<i>10 pages</i>)	126027
Hernán A. González, Andrea Puhm, and Francisco Rojas	
Asymptotic symmetry and classical holographic dual of dS_3 supergravity (<i>8 pages</i>)	126028
Arindam Bhattacharjee	
Thermodynamics of heavy quarkonium in rotating matter from holography (<i>7 pages</i>)	126029
Jing Zhou, Xun Chen, Yan-Qing Zhao, and Jialun Ping	

ERRATA

Erratum: Quantum inequalities in two dimensional curved spacetimes [Phys. Rev. D 66 , 104007 (2002)] (<i>1 pages</i>)	129901
Éanna É. Flanagan	

