Volume 111, Issue 6

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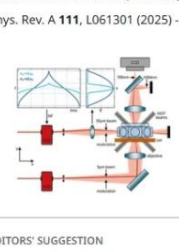
HIGHLIGHTED ARTICLES

FEATURED IN PHYSICS LETTER

All-optical production of Bose-Einstein condensates with a 2-Hz repetition rate

Mareike Hetzel, Martin Quensen, Jan Simon Haase, and Carsten Klempt

Phys. Rev. A **111**, L061301 (2025) - Published 3 June, 2025



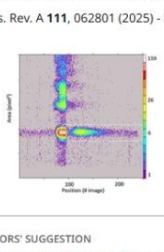
The authors demonstrate the generation of rubidium Bose-Einstein condensates with a repetition rate exceeding 2 Hz, utilizing forced evaporation in a dynamically adjusted optical potential. Reduced preparation times enhance data acquisition rates in scientific applications, increase the bandwidth of atomic quantum sensors, and further promote the use of BECs in high-precision atom interferometry.

EDITORS' SUGGESTION

Electronic emission in a single ion-nanoparticle collision

Thibault Nguyen Trung, Michel Du Chalard, Marin Chabot, Olivier Sublemontier, Emmanuel Dartois, Thomas Pino, Isabelle Ribaud, Benoit Gervais, Eric Giglio, Jean Duprat, and Karine Béroff

Phys. Rev. A **111**, 062801 (2025) - Published 2 June, 2025



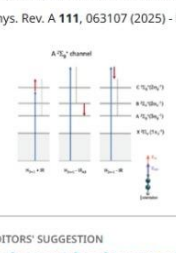
The authors experimentally and theoretically study the size effects on the electron emission from polystyrene nanoparticles collided by fast ions. They employ a crossed-beam setup to measure the charge-state distributions of nanoparticles following collisions with a wide range of ions.

EDITORS' SUGGESTION

Three-path interferences in the reconstruction of attosecond beatings by interference of two-photon transitions in molecules

Jorge Delgado, Celso M. González-Collado, Piero Decleva, Alicia Palacios, and Fernando Martín

Phys. Rev. A **111**, 063107 (2025) - Published 16 June, 2025



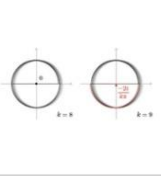
The authors present a thorough theoretical study of the acetylene molecule using the RABBIT technique for measuring photoionization time delays. They show that the presence of an additional third ionization path, opened up by the driving IR field being resonant with transitions between bound states of the cation, can strongly affect the values and physical meaning of photoionization delays extracted from fits based on the commonly used two-path interference scheme.

EDITORS' SUGGESTION

Coherent backscattering and coherent forward-scattering effects in variations of the random quantum kicked rotor

Hugo Thomas, Julien Hébraud, Bertrand Georgeot, Gabriel Lemarié, Christian Miniatura, and Olivier Giraud

Phys. Rev. A **111**, 063302 (2025) - Published 5 June, 2025



The authors investigate coherent interference effects in the quantum kicked rotor, a model of quantum chaos. They find that the signatures of these effects are unexpectedly sensitive to the initial time of observation, and reveal that this is due to a nontrivial, oscillatory background. By modeling and subtracting this background, they recover consistent contrast profiles, providing an insight into the accurate interpretation of cold atom experiments.

EDITORS' SUGGESTION LETTER

Uncertainty relations relative to phase-space quantum reference frames

Miguel Jorquera Riera and Leon Loveridge

Phys. Rev. A **111**, L060201 (2025) - Published 9 June, 2025

The authors show that Heisenberg's uncertainty relation is modified when considered relative to a phase-space quantum reference frame, and that such a frame destroys the incompatibility of position and momentum. They recover the standard uncertainty bound by taking the classical limit of the frame, arguing that standard quantum theory relies on an implicit classical frame.

LETTERS

Fundamental concepts

EDITORS' SUGGESTION LETTER

Uncertainty relations relative to phase-space quantum reference frames

Miguel Jorquera Riera and Leon Loveridge

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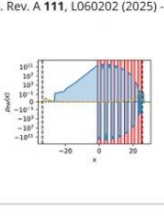
LETTER

Effects of superradiance on relativistic Foldy-Wouthuysen densities

F. Daem and A. Matzkin

Phys. Rev. A **111**, L060202 (2025) - Published 12 June, 2025



The authors show that the densities in the Foldy-Wouthuysen representation can propagate, in the presence of superradiance, outside the light cone with an arbitrarily high amplitude. These results, obtained in the context of the Klein-Gordon equation, indicate that the Foldy-Wouthuysen densities, despite their attractive properties, might not be fundamentally correct to represent the physical charge densities.

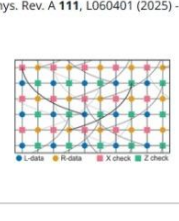
Quantum information science

LETTER

Multivariate bicycle codes

Lukas Voss, Sim Jian Xian, Tobias Haug, and Kishor Bharti

Phys. Rev. A **111**, L060401 (2025) - Published 23 June, 2025



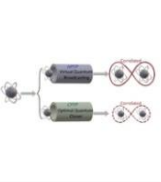
This work introduces multivariate bicycle codes, a class of quantum low-density parity-check codes that generalize bivariate constructions. By combining low-weight parity checks with efficient use of physical qubits, these codes achieve higher encoding rates than surface codes and are well-suited for near-term experimental implementation.

LETTER

Experimental virtual quantum broadcasting

Yuxuan Zheng, Xinfang Nie, Hongfeng Liu, Yutong Luo, Dawei Lu, and Xiangjing Liu

Phys. Rev. A **111**, L060402 (2025) - Published 23 June, 2025



Quantum cloning of mixed states, also known as virtual quantum cloning, is realized using nuclear spins.

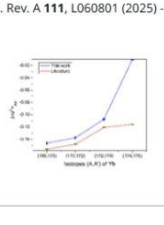
Atomic and molecular structure and dynamics; high-precision experiments

LETTER

Precise determination of electric quadrupole moments and isotope shift constants of in pursuance of probing fundamental physics and nuclear radii

B. K. Sahoo

Phys. Rev. A **111**, L060801 (2025) - Published 2 June, 2025



Contemplating to probe signature of a new vector boson, leading-order isotope shift constants of the transitions in the singly charged ytterbium ion (Yb+) are determined by incorporating contributions from the triple excitation correlators of the relativistic coupled-cluster theory. Calculations are validated by investigating results for energies, hyperfine structure constants, and electric quadrupole moments of the ground and metastable states of Yb.

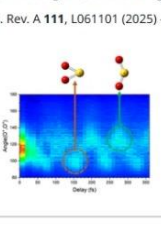
Light-induced processes in atomic-scale systems

LETTER

Simultaneous imaging of vibrational, rotational, and electronic wave-packet dynamics in a triatomic molecule

Huynh Van Sa Lam, Van-Hung Hoang, Anbu Selvam Venkatachalam, Surjendu Bhattacharyya, Keyu Chen, Sina Jacob, Sanduni Kudagama, Tu Thanh Nguyen, Daniel Rolles, Uwe Thumm, Artem Rudenko, and Vinod Kumarappan

Phys. Rev. A **111**, L061101 (2025) - Published 12 June, 2025



The authors employ time-resolved Coulomb explosion to image a sulfur dioxide molecule as it vibrates, rotates, and changes electronic state. These snapshots form a movie showing how the interplay between different degrees of freedom shapes the time evolution of the molecular wave packet and defines the outcome of photoinduced chemical reactions like dissociation and molecular elimination.

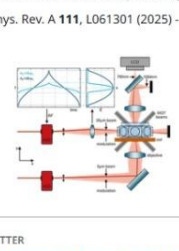
Ultracold systems and matter waves

FEATURED IN PHYSICS LETTER

All-optical production of Bose-Einstein condensates with a 2-Hz repetition rate

Mareike Hetzel, Martin Quensen, Jan Simon Haase, and Carsten Klempt

Phys. Rev. A **111**, L061301 (2025) - Published 3 June, 2025



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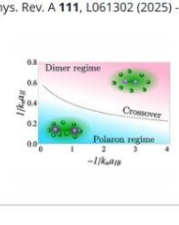
LETTER

Polaronic dressing of bound states

L. A. Peña Ardila and A. Camacho-Guardian

Phys. Rev. A **111**, L061302 (2025) - Published 17 June, 2025



This study reveals how polaronic dressing modifies the properties of molecular bound states formed by two impurities in a Bose-Einstein condensate. The authors unveil a crossover between robust dimers and fragile bound states suppressed by strong polaron effects.

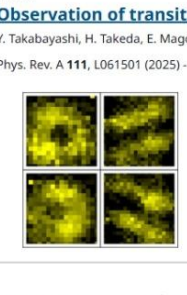
Photonics, nonlinear optics, and optomechanics

LETTER

Observation of transition radiation carrying orbital angular momentum

Y. Takabayashi, H. Takeda, E. Magome, K. Sumitani, P. O. Kazinski, P. S. Korolev, O. V. Bogdanov, and T. A. Tukhfatullin

Phys. Rev. A **111**, L061501 (2025) - Published 27 June, 2025



The authors investigate the orbital angular momentum carried by transition radiation generated through the interaction of a relativistic electron beam with a solid target. Diffraction patterns for the transition radiation, observed after the radiation has passed through a triangular aperture and a double slit, clearly demonstrate that the radiation possesses orbital angular momentum.

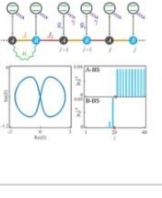
Quantum optics

LETTER

Chiral-extended photon-emitter dressed states in non-Hermitian topological baths

Zhao-Fan Cai, Xin Wang, Zi-Xuan Liang, Tao Liu, and Franco Nori

Phys. Rev. A **111**, L061701 (2025) - Published 10 June, 2025



The authors explore how quantum emitters coupled to a non-Hermitian topological photonic bath give rise to in-gap chiral and extended dressed states, emerging from the interplay between topological edge localization, non-Hermitian skin effects, and the non-Bloch bulk–boundary correspondence. These photon-emitter hybrid modes exhibit dissipation-tunable spatial profiles and mediate strongly nonreciprocal, long-range interactions between emitters, with a range set solely by the bath's loss rate.

ARTICLES

Fundamental concepts

Single-qubit probes for temperature estimation in the presence of collective baths

Asghar Ullah, Marco Cattaneo, and Özgür E. Müstecaplıoğlu

Phys. Rev. A **111**, 062201 (2025) - Published 2 June, 2025

Phase diagram of the Schwinger model by adiabatic preparation of states on a quantum simulator

Oleg Kaikov, Theo Saporiti, Vasily Sazonov, and Mohamed Tamaazousti

Phys. Rev. A **111**, 062202 (2025) - Published 2 June, 2025

Quantum information with quantumlike bits

Graziano Amati and Gregory D. Scholes

Phys. Rev. A **111**, 062203 (2025) - Published 2 June, 2025

Autonomous coarse-grained cooling of the coldest reservoir not restricted by the second law of thermodynamics

I. V. Vovchenko, A. A. Zyablovsky, A. A. Pukhov, and E. S. Andrianov

Phys. Rev. A **111**, 062204 (2025) - Published 2 June, 2025

Thermodynamics of coherent energy exchanges between lasers and two-level systems

Ariane Soret and Massimiliano Esposito

Phys. Rev. A **111**, 062205 (2025) - Published 2 June, 2025

Analytical solutions of bilinear bosonic models and exact characterization of non-Markovian dynamics

Zhao-Ming Wang, S. L. Wu, Mark S. Byrd, and Lian-Ao Wu

Phys. Rev. A **111**, 062206 (2025) - Published 4 June, 2025

Violation of steering inequality for generalized equiangular measurements

Adam Rutkowski and Katarzyna Siudzińska

Phys. Rev. A **111**, 062207 (2025) - Published 5 June, 2025

Effect of self-interaction on Feynman's interpretation of the Lamb shift

Peter W. Milonni, Paul R. Berman, and Kanu Sinha

Phys. Rev. A **111**, 062208 (2025) - Published 11 June, 2025

Investigation of the topological quantum phase transition in a superconducting system via quantum walks

Yi-Hao Kang, Qi-Ping Su, Yu Wang, Lijiong Shen, and Chui-Ping Yang

Phys. Rev. A **111**, 062209 (2025) - Published 13 June, 2025

Time-evolving matrix product operator method in a nondiagonal basis set based on the derivative of the path-integral expression

Shaoxiong Zhang and Qiang Shi

Phys. Rev. A **111**, 062210 (2025) - Published 16 June, 2025

Lindblad dynamics of open multimode bosonic systems: Algebra of quadratic superoperators, exceptional points, and speed of evolution

Andrei Gaidash, Alexei D. Kiselev, Anton Kozubov, and George Miroshnichenko

Phys. Rev. A **111**, 062211 (2025) - Published 16 June, 2025

Quantum thermal machine regimes in the transverse-field Ising model

Vishnu Muraleedharan Sajitha, Bodhaditya Santra, Matthew J. Davis, and L. A. Williamson

Phys. Rev. A **111**, 062212 (2025) - Published 16 June, 2025

Efficient measure of information backflow with a quasistochastic process

Kelvin Onggadinata and Teck Seng Koh

Phys. Rev. A **111**, 062214 (2025) - Published 17 June, 2025

Quantum coherence and distinguishability as complementary resources: A resource-theoretic perspective from wave-particle duality

Zhiping Liu, Chengkai Zhu, Hua-Lei Yin, and Xin Wang

Phys. Rev. A **111**, 062215 (2025) - Published 23 June, 2025

Effective Floquet Lindblad generators from spectral unwinding

Gonkarn D. Dinc, André Eckardt, and Alexander Schnell

Phys. Rev. A **111**, 062216 (2025) - Published 24 June, 2025

Identifying quantum resources in convex resource theories with Kirkwood-Dirac quasiprobabilities

Kok Chuan Tan and Souradeep Sasmal

Phys. Rev. A **111**, 062217 (2025) - Published 25 June, 2025

Quantum information science

Strict advantage of complex quantum theory in a communication task

Thomas J. Elliott

Phys. Rev. A **111**, 062401 (2025) - Published 2 June, 2025

Quantum error mitigation for rotation-symmetric bosonic codes with symmetry expansion

Suguru Endo, Yasunari Suzuki, Kento Tsubouchi, Rui Asaoka, Kaoru Yamamoto, Yuichiro Matsuzaki, and Yuuki Tokunaga

Phys. Rev. A **111**, 062402 (2025) - Published 2 June, 2025

Operational simultaneous correlations in complementary bases of bipartite states via one-sided semi-device-independent steering

Chellasamy Jebarathinam, Debarshi Das, Huan-Yu Ku, Debasis Sarkar, and Hsi-Sheng Goan

Phys. Rev. A **111**, 062403 (2025) - Published 2 June, 2025

Variational quantum algorithm based on Lagrange polynomial encoding to solve differential equations

Josephine Hunout, Sylvain Laizet, and Lorenzo Iannucci

Phys. Rev. A **111**, 062404 (2025) - Published 3 June, 2025

Nonlinear classification capability of quantum neural networks due to emergent quantum metastability

Mario Boneberg, Federico Carollo, and Igor Lesanovsky

Phys. Rev. A **111**, 062405 (2025) - Published 3 June, 2025

Feedback-based optimally controlled quantum states

Lucas T. Brady and Stuart Hadfield

Phys. Rev. A **111**, 062406 (2025) - Published 4 June, 2025

Choi-defined resource theories

Elia Zanoni and Carlo Maria Scandolo

Phys. Rev. A **111**, 062407 (2025) - Published 5 June, 2025

Heisenberg-scaling precision in the estimation of two parameters in a Mach-Zehnder interferometer

Atmadev Rai, Danilo Triggiani, Paolo Facchi, and Vincenzo Tamma

Phys. Rev. A **111**, 062408 (2025) - Published 5 June, 2025

Optimal estimation of three parallel spins with genuine and restricted collective measurements

Chenghan Yi, Kai Zhou, Zhibo Hou, Guo-Yong Xiang, and Huangjun Zhu

Phys. Rev. A **111**, 062409 (2025) - Published 5 June, 2025

Quantum machine learning for multiclass classification beyond kernel methods

Chao Ding, Shi-Yao Hou, Wanwan Wang, and Weibo Gao

Phys. Rev. A **111**, 062410 (2025) - Published 5 June, 2025

Lower bounds on the number of rounds of the quantum approximate optimization algorithm required for guaranteed approximation ratios

Sigurd Benchasattabuse, Andreas Bärtschi, Luis Pedro García-Pintos, John Golden, Nathan Lemons, and Stephan Eidenbenz

Phys. Rev. A **111**, 062411 (2025) - Published 5 June, 2025

Dispersive qubit readout of temperature

Dong Xie and Chunling Xu

Phys. Rev. A **111**, 062412 (2025) - Published 9 June, 2025

Clifford circuit initialization for variational quantum algorithms

M. H. Cheng, K. E. Khosla, C. N. Self, M. Lin, B. X. Li, A. C. Medina, and M. S. Kim

Phys. Rev. A **111**, 062413 (2025) - Published 9 June, 2025

Typical behavior of genuine multimode entanglement of pure Gaussian states

Saptarshi Roy

Phys. Rev. A **111**, 062414 (2025) - Published 10 June, 2025

Temporal correlating power of quantum channels

Yi Guo and Shunlong Luo

Phys. Rev. A **111**, 062415 (2025) - Published 11 June, 2025

Comparison of encoding schemes for quantum computing of spin chains

Erik Lötstedt and Kaoru Yamanouchi

Phys. Rev. A **111**, 062416 (2025) - Published 11 June, 2025

Nonstabilizerness of a boundary time crystal

Gianluca Passarelli, Angelo Russomanno, and Procolo Lucignano

Phys. Rev. A **111**, 062417 (2025) - Published 12 June, 2025

Enhanced Hamiltonian learning precision with multistage neural networks

Zhengjie Kang, Hao Li, Shuo Wang, Jiaojiao Li, Yuanjie Zhang, and Zhihuang Luo

Phys. Rev. A **111**, 062418 (2025) - Published 13 June, 2025

Monogamy-of-entanglement-inspired protocol for quantifying bipartite entanglement using spin squeezing

Diego Fallas Padilla, Mingjian Zhu, and Han Pu

Phys. Rev. A **111**, 062419 (2025) - Published 13 June, 2025

Low-depth phase oracle using a parallel piecewise circuit

Zhu Sun, Gregory Boyd, Zhenyu Cai, Hamza Jnane, Bálint Koczor, Richard Meister, Romy Minko, Benjamin Pring, Simon C. Benjamin, and Nikitas Stamatopoulos

Phys. Rev. A **111**, 062420 (2025) - Published 16 June, 2025

Quantum framework for reinforcement learning: Integrating the Markov decision process, quantum arithmetic, and trajectory search

Thet Htar Su, Shaswot Shresthamali, and Masaaki Kondo

Phys. Rev. A **111**, 062421 (2025) - Published 17 June, 2025

Power-optimized amplitude modulation for robust trapped-ion entangling gates: A study of gate-timing errors

Luke Ellert-Beck and Wenchao Ge

Phys. Rev. A **111**, 062422 (2025) - Published 17 June, 2025

No-broadcasting of coherence in terms of Wigner-Yanase skew information

Zijian Zhang, Nan Li, and Shunlong Luo

Phys. Rev. A **111**, 062423 (2025) - Published 20 June, 2025

Wide-band magnetometry based on color centers with transverse zero-field splitting

Xiaoyin Ding, Lu Chen, and Qiong Chen

Phys. Rev. A **111**, 062424 (2025) - Published 20 June, 2025

Quantum observable's reality erasure with spacelike-separated operations

J. S. Araújo, D. S. Starke, A. S. Coelho, J. Maziero, G. H. Aguilar, and R. M. Angelo

Phys. Rev. A **111**, 062425 (2025) - Published 20 June, 2025

Super-Heisenberg scaling of quantum Fisher information using spin-motion states

Venelin P. Pavlov and Peter A. Ivanov

Phys. Rev. A **111**, 062426 (2025) - Published 23 June, 2025

Efficient implementation of the unitary coupled-cluster ansatz in high-dimensional trapped-ion systems

Peng Wang, Xueying Yang, Chun-Wang Wu, Chunyan Li, Wei Wu, and Ping-Xing Chen

Phys. Rev. A **111**, 062427 (2025) - Published 23 June, 2025

State learning from pairs of states

Pranjal Agarwal, Nada Ali, Camilla Polvara, Martin Sidgarin Trapper, Berthold-Georg Englert, and Mark Hillery

Phys. Rev. A **111**, 062428 (2025) - Published 24 June, 2025

Quantum technologies

Anomalously slow dynamics of inhomogeneous quantum annealing

Mohammadhossein Dadgar and Christopher L. Baldwin

Phys. Rev. A **111**, 062601 (2025) - Published 2 June, 2025

Noisy Stark probes as quantum-enhanced sensors

Saubhik Sarkar and Abolfazl Bayat

Phys. Rev. A **111**, 062602 (2025) - Published 2 June, 2025

Minimum optical depth multiport interferometers for approximating arbitrary unitary operations and pure states

Luciano Pereira, Alejandro Rojas, Gustavo Lima, Aldo Delgado, Gustavo Cañas, and Adán Cabello

Phys. Rev. A **111**, 062603 (2025) - Published 2 June, 2025

Efficient learning and optimizing non-Gaussian correlated noise in digitally controlled qubit systems

Wenzheng Dong, Yuanlong Wang, and Muhammad Qasim Khan

Phys. Rev. A **111**, 062605 (2025) - Published 3 June, 2025

Cost of emulating a small quantum annealing problem in the circuit model

Javier Gonzalez-Conde, Zachary Morrell, Marc Vuffray, Tameem Albash, and Carleton Coffrin

Phys. Rev. A **111**, 062606 (2025) - Published 4 June, 2025

Experimental secure entanglement-free quantum remote sensing over 50 km of optical fiber

Wenjie He, Chunfeng Huang, Rui Guan, Ye Chen, Zhenrong Zhang, and Kejin Wei

Phys. Rev. A **111**, 062607 (2025) - Published 4 June, 2025

Mitigation of birefringence in cavity-based quantum networks using frequency-encoded photons

Chengxi Zhang, Justin Phillips, Inder Monga, Ethan Saglamyurek, Qiming Wu, and Hartmut Haeffner

Phys. Rev. A **111**, 062608 (2025) - Published 4 June, 2025

Real-time adaptation of quantum noise channel estimates

Lucas Dagostini and Mohan Sarovar

Phys. Rev. A **111**, 062609 (2025) - Published 5 June, 2025

Quantum algorithm for Green's-function measurements in the Fermi-Hubbard model

Gino Bishop, Dmitry Bagrets, and Frank K. Wilhelm

Phys. Rev. A **111**, 062610 (2025) - Published 9 June, 2025

Quantum repeaters based on stationary Gottesman-Kitaev-Preskill qubits

Stefan Häussler and Peter van Loock

Phys. Rev. A **111**, 062611 (2025) - Published 9 June, 2025

Four-body coupler for superconducting qubits based on Josephson parametric oscillators

Ryoji Miyazaki and Tsuyoshi Yamamoto

Phys. Rev. A **111**, 062612 (2025) - Published 9 June, 2025

Mapping of a many-qubit state onto an oscillator using controlled displacements

Anders J. E. Bjerrum, Ulrik L. Andersen, and Peter Rabl

Phys. Rev. A **111**, 062613 (2025) - Published 11 June, 2025

Integrating measurement-device-independent quantum-key-distribution systems into an optical transport network

Irina Vorontsova, Roman Goncharov, Alexei Sarlaev, Fedor Kiselev, Eduard Samsonov, and Vladimir Egorov

Phys. Rev. A **111**, 062614 (2025) - Published 13 June, 2025

Estimation of Imbert-Fedorov shifts based on SU(1,1) interferometer breaking through the shot-noise limit

Yuetao Chen, Jing Wang, Qiang Wu, Gaiqing Chen, Mengmeng Luo, Shoukang Chang, and Shaoyan Gao

Phys. Rev. A **111**, 062615 (2025) - Published 16 June, 2025

Reservoir-assisted quantum battery charging at finite temperatures

Y. Yao and X. Q. Shao

Phys. Rev. A **111**, 062616 (2025) - Published 17 June, 2025

Nearest-neighbor synthesis of controlled- circuits on general quantum architectures

Xinyu Chen, Mingqiang Zhu, Xueyun Cheng, Zhijin Guan, Shiguang Feng, and Pengcheng Zhu

Phys. Rev. A **111**, 062617 (2025) - Published 17 June, 2025

Fidelity and efficiency analysis for heralded entanglement swapping in lossy channels: Linear and nonlinear optical approaches

Kejie Fang and Elizabeth A. Goldschmidt

Phys. Rev. A **111**, 062618 (2025) - Published 18 June, 2025

Quantum metrology of a structured reservoir

Youssef Aache, Asghar Ullah, Özgür E. Müstecaplıoğlu, and Abderrahim El Allati

Phys. Rev. A **111**, 062619 (2025) - Published 18 June, 2025

Utilizing evolution time as a resource to enhance quantum sensing by probe qubit dephasing

Ji-Bing Yuan, Hai-Pei Lu, Ya-Ju Song, Shi-Qing Tang, Yan-Wen Wang, and Le-Man Kuang

Phys. Rev. A **111**, 062620 (2025) - Published 24 June, 2025

Parallel teleportation of partially unknown quantum operations with multiple degrees of freedom based on the nitrogen-vacancy-center system

Xiao-Ming Xiu, Zi-Lin Zhao, Zi-Qing Yuan, Si-Cen Chen, Xin-Yi Zhang, Yan-Qiang Ji, and Li Dong

Phys. Rev. A **111**, 062621 (2025) - Published 25 June, 2025

Resonator-activated entangling gates for spin qubits in quantum dots

Wen-Qin He, Jin-Rong Liu, and Jing-Yu Zhu

Phys. Rev. A **111**, 062622 (2025) - Published 26 June, 2025

Combining quantum noise reduction resources: A practical approach

Sohini Ghosh, Matthew A. Feldman, Seongjin Hong, Claire E. Marvinney, Alberto M. Marino, Raphael C. Pooser, and Jacob M. Taylor

Phys. Rev. A **111**, 062623 (2025) - Published 26 June, 2025

Atomic and molecular structure and dynamics; high-precision experiments

EDITORS' SUGGESTION

Electronic emission in a single ion-nanoparticle collision

Thibault Nguyen Trung, Michel Du Chalard, Marin Chabot, Olivier Sublemontier, Emmanuel Dartois, Thomas Pino, Isabelle Ribaud, Benoit Gervais, Eric Giglio, Jean Duprat, and Karine Béroff

Phys. Rev. A **111**, 062801 (2025) - Published 2 June, 2025

The authors experimentally and theoretically study the size effects on the electron emission from polystyrene nanoparticles collided by fast ions. They employ a crossed-beam setup to measure the charge-state distributions of nanoparticles following collisions with a wide range of ions.

Determination of quantum defects and core polarizability of atomic cesium via terahertz and radio-frequency spectroscopy in thermal vapor

Gianluca Allinson, Lucy A. Downes, C. Stuart Adams, and Kevin J. Weatherill

Phys. Rev. A **111**, 062802 (2025) - Published 2 June, 2025

Unraveling the structures in the van der Waals interactions of alkali-metal Rydberg atoms

Karen Wadenpfuhl and C. Stuart Adams

Phys. Rev. A **111**, 062803 (2025) - Published 2 June, 2025

Quantum chemical computations of Raman intensities: An ambiguity of the Placzek approximation

Jaroslav Šebestík and Petr Bouř

Phys. Rev. A **111**, 062804 (2025) - Published 4 June, 2025

Benchmarking direct and indirect dipolar spin-exchange interactions between two Rydberg atoms

Gabriel Emperauger, Mu Qiao, Guillaume Bornet, Cheng Chen, Romain Martin, Yuki Torii Chew, Bastien Gély, Lukas Klein, Daniel Barredo, Antoine Browaeys, and Thierry Lahaye

Phys. Rev. A **111**, 062806 (2025) - Published 4 June, 2025

Experimental triple-differential cross sections for electron-impact ionization of 1-methyl-5-nitroimidazole at 97-eV impact energy

Deepthy Maria Mootheril, Maomao Gong, Xueguang Ren, Carlos Guerra Castillo, Xiangjun Chen, Gustavo García, Thomas Pfeifer, and Alexander Dorn

Phys. Rev. A **111**, 062807 (2025) - Published 5 June, 2025

Cascading interatomic Coulombic electron capture induced by a single incident electron in two- and three-center atomic systems

L. M. Ellerbrock, A. B. Voitkiv, and C. Müller

Phys. Rev. A **111**, 062808 (2025) - Published 6 June, 2025

Polarizabilities of low-lying states of silver

S. G. Porsev, D. Filin, C. Cheung, and M. S. Safronova

Phys. Rev. A **111**, 062809 (2025) - Published 9 June, 2025

Measurement of the electric dipole moment of AlCl by Stark-level spectroscopy

Li-Ren Liu, Miguel Aguirre, Jr., Stephen R. Kane, Brian K. Kendrick, and Boerge Hemmerling

Phys. Rev. A **111**, 062810 (2025) - Published 10 June, 2025

Projectile excitation to the and autoionizing states in swift collisions of He-like carbon and oxygen mixed-state ion beams with helium

A. Laoutaris, S. Passalidis, S. Nanos, A. Biniskos, E. P. Benis, A. Dubois, and T. J. M. Zouros

Phys. Rev. A **111**, 062811 (2025) - Published 11 June, 2025

Demonstrating correlation trends in the electric dipole polarizabilities of many low-lying states in Cs$^+$ through first-principles calculations

A. Chakraborty and B. K. Sahoo

Phys. Rev. A **111**, 062812 (2025) - Published 12 June, 2025

Ionization cross section of the Cu shell by electron impact from the threshold to 90 keV, determined on the basis of diagram lines, satellite lines, and the radiative Auger effect

Suelen F. Barros, Ira L. Dordengo, Nora L. Maidana, Alessio Mangiarotti, Vito R. Vanin, and José M. Fernández-Varea

Phys. Rev. A **111**, 062813 (2025) - Published 16 June, 2025

Ultracold silver-atom collisions and the formation of silver dimers by photo- and magneto-association

Elie Tiesinga, Jacek Kłos, Hui Li, Svetlana Kotochigova, and David DeMille

Phys. Rev. A **111**, 062814 (2025) - Published 17 June, 2025

Prospects for measuring the electron's electric dipole moment with polyatomic molecules in an optical lattice

Roman Bause, Nithesh Balasubramanian, Ties Fikkers, Eifion H. Prinsen, Kees Steinebach, Arian Jadbabaie, Nicholas R. Hutzler, I. Agustín Aucar, Lukáš F. Pašteka, Anastasia Borschevsky, and Steven Hoekstra

Phys. Rev. A **111**, 062815 (2025) - Published 17 June, 2025

Ionization and kinetic-energy release in electron-impact dissociation of and

Reese A. Horton, Michael C. Pak, Igor Bray, and Dmitry V. Fursa

Phys. Rev. A **111**, 062816 (2025) - Published 18 June, 2025

Progress toward a formulation of density-functional theory for matrix representations

Michael Filatov(Gulak) and Seung Kyu Min

Phys. Rev. A **111**, 062818 (2025) - Published 20 June, 2025

Blackbody radiation Zeeman shift in Rydberg atoms

K. Beloy, B. D. Hunt, B. C. Brown, T. Bothwell, V. S. Hassan, J. L. Siegel, T. Grogan, and A. D. Ludlow

Phys. Rev. A **111**, 062819 (2025) - Published 23 June, 2025

Resonant photon scattering in the presence of external fields and its applications for the CERN Gamma Factory project

Jan Richter, Mieczysław Witold Krasny, Jan Gilles, and Andrey Surzhykov

Phys. Rev. A **111**, 062820 (2025) - Published 24 June, 2025

Thermal nonequilibrium relaxation of methane-nitrogen system investigated by state-resolved deep-potential-energy molecular dynamics

Hongjun Hu, Changmin Guo, Hongwei Song, and Jianyi Ma

Phys. Rev. A **111**, 062821 (2025) - Published 24 June, 2025

Electric-field-dependent factors of

Alexander Petrov and Leonid V. Skripnikov

Phys. Rev. A **111**, 062822 (2025) - Published 24 June, 2025

Spin versus position conjugation in quantum simulations with atoms: Application to quantum chemistry

N. A. Moroz, K. S. Tikhonov, L. V. Gerasimov, A. D. Manukhova, S. B. Bobrov, D. V. Stroapa, and D. V. Kupriyanov

Phys. Rev. A **111**, 062823 (2025) - Published 26 June, 2025

Light-induced processes in atomic-scale systems

Perturbation-theory approach for predicting vibronic selectivity by entangled-photon-pair absorption

C. D. Rodríguez-Camargo, H. D. Gestsson, C. Nation, A. R. Jones, and A. Olaya-Castro

Phys. Rev. A **111**, 063101 (2025) - Published 2 June, 2025

Direct observation of two-photon resonance Autler-Townes splitting of atomic sodium

Wankui Li, Yixuan Wang, Xing Li, Tao Yang, Dongdong Zhang, and Dajun Ding

Phys. Rev. A **111**, 063102 (2025) - Published 2 June, 2025

Terahertz-field-modulated high-order harmonic generation in monolayer

Xiaoxi Liu, Jianing Zhang, Yong-Kang Fang, Guangtu Yuan, Zhengliang Li, and Liang-You Peng

Phys. Rev. A **111**, 063103 (2025) - Published 4 June, 2025

Quantitative comparison of high-order harmonic yields in ring-shaped organic molecules calculated using time-dependent density-functional theory

Kyle A. Hamer, Stephanie N. Armond, Ravi Bhardwaj, Francois Mauger, Kenneth Lopata, Kenneth J. Schafer, and Mette B. Gaarde

Phys. Rev. A **111**, 063104 (2025) - Published 4 June, 2025

High-order harmonic generation in a crystal driven by quantum light

Rasmus Vesterager Gothelf, Christian Saugbjerg Lange, and Lars Bojer Madsen

Phys. Rev. A **111**, 063105 (2025) - Published 6 June, 2025

Noise budget of a trapped on-chip cold-atom clock

M. Dupont-Nivet, B. Wirtschafter, S. Helks, and C. I. Westbrook

Phys. Rev. A **111**, 063106 (2025) - Published 12 June, 2025

EDITORS' SUGGESTION

Three-path interferences in the reconstruction of attosecond beatings by interference of two-photon transitions in molecules

Jorge Delgado, Celso M. González-Collado, Piero Decleva, Alicia Palacios, and Fernando Martín

Phys. Rev. A **111**, 063107 (2025) - Published 16 June, 2025

The authors present a thorough theoretical study of the acetylene molecule using the RABBIT technique for measuring photoionization time delays. They show that the presence of an additional third ionization path, opened up by the driving IR field being resonant with transitions between bound states of the cation, can strongly affect the values and physical meaning of photoionization delays extracted from fits based on the commonly used two-path interference scheme.

Exactly solvable two-level model with time-dependent coupling, detuning, and loss: Application to strong-field resonance ionization

Ayoub Ali Elaradi and András Csehi

Phys. Rev. A **111**, 063108 (2025) - Published 17 June, 2025

High-order harmonic generation in the vanadium monoanion and its hexacarbonyl complex

Xi Chu

Phys. Rev. A **111**, 063109 (2025) - Published 17 June, 2025

Interaction of a Poincaré beam with optically polarized atoms in the presence of a constant magnetic field

S. Ramakrishna and S. Fritzsche

Phys. Rev. A **111**, 063110 (2025) - Published 20 June, 2025

Stimulated x-ray Raman scattering for selective preparation of dark states bypassing optical selection rules

Francesco Montorsi, Shaul Mukamel, Filippo Tamassia, Marco Garavelli, Francesco Segatta, and Artur Nenov

Phys. Rev. A **111**, 063111 (2025) - Published 24 June, 2025

Signatures of intervalley interferences and valley asymmetries in high-order harmonic generation in pristine graphene

Xi Liu, Dongdong Liu, Yan Sun, Yuge Li, and Cui Zhang

Phys. Rev. A **111**, 063112 (2025) - Published 25 June, 2025

Coherent control of ion-photoelectron dynamics through Rabi oscillations: An *ab initio* study

Bo-Ren Shen, Yi-Jia Mao, Zhao-Han Zhang, Yong Li, Takeshi Sato, Kenichi L. Ishikawa, and Feng He

Phys. Rev. A **111**, 063113 (2025) - Published 26 June, 2025

Background reduction in double-beta-decay experiments through direct barium-ion detection

A. Peralta Conde

Phys. Rev. A **111**, 063114 (2025) - Published 30 June, 2025

Ultracold systems and matter waves

Topological phases protected by projective space-time inversion symmetry in alkaline-earth-metal-like atoms

Xiaofan Zhou, Suotang Jia, and Jian-Song Pan

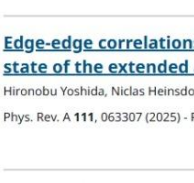
Phys. Rev. A **111**, 063301 (2025) - Published 2 June, 2025

EDITORS' SUGGESTION

Coherent backscattering and coherent forward-scattering effects in variations of the random quantum kicked rotor

Hugo Thomas, Julien Hébraud, Bertrand Georgeot, Gabriel Lemarié, Christian Miniatura, and Olivier Giraud

Phys. Rev. A **111**, 063302 (2025) - Published 5 June, 2025



The authors investigate coherent interference effects in the quantum kicked rotor, a model of quantum chaos. They find that the signatures of these effects are unexpectedly sensitive to the initial time of observation, and reveal that this is due to a nontrivial, oscillatory background. By modeling and subtracting this background, they recover consistent contrast profiles, providing an insight into the accurate interpretation of cold atom experiments.

Double unstable avoided crossings and complex-domain-pattern formation in spin-orbit-coupled spin-1 condensates

Sanu Kumar Gangwar, Rajamanickam Ravisankar, Henrique Fabrelli, Paulsamy Muruganandam, and Pankaj Kumar Mishra

Phys. Rev. A **111**, 063303 (2025) - Published 5 June, 2025

Coherent coupling of momentum states: Selectivity and phase control

Charlie Leprince, Victor Gondret, Clothilde Lamirault, Rui Dias, Quentin Marolleau, Denis Boiron, and Christoph I. Westbrook

Phys. Rev. A **111**, 063304 (2025) - Published 5 June, 2025

Band-edge superfluid of Bose-Einstein condensates in the spin-orbit-coupled Zeeman lattice

Huaxin He, Fengbo Pang, Hao Lyu, and Yongping Zhang

Phys. Rev. A **111**, 063305 (2025) - Published 5 June, 2025

Topologically nontrivial and trivial flat bands via weak and strong interlayer coupling in twisted bilayer honeycomb optical lattices for ultracold atoms

Wenjie Sui, Wei Han, Zhang Vitto Han, Zengming Meng, and Jing Zhang

Phys. Rev. A **111**, 063306 (2025) - Published 5 June, 2025

Edge-edge correlations without edge states: -clustering state as the ground state of the extended attractive SU(3) Hubbard chain

Hironobu Yoshida, Niclas Heinsdorf, and Hosho Katsura

Phys. Rev. A **111**, 063307 (2025) - Published 6 June, 2025

Two-dimensional bosonic droplets in a harmonic trap

Fabian Brauneis, Artem G. Volosniev, and Hans-Werner Hammer

Phys. Rev. A **111**, 063308 (2025) - Published 10 June, 2025

Wave-function microscopy: Derivation and anatomy of exact algebraic spinful wave functions and full Wigner-molecular spectra of a few highly correlated rapidly rotating ultracold fermionic atoms

Constantine Yannouleas and Uzi Landman

Phys. Rev. A **111**, 063309 (2025) - Published 13 June, 2025

Finite-temperature entanglement and coherence in asymmetric bosonic Josephson junctions

Cesare Vianello, Matteo Ferraretto, and Luca Salasnich

Phys. Rev. A **111**, 063310 (2025) - Published 16 June, 2025

Supersolid dipolar phases in planar geometry: Effects of tilted polarization

Daniel Lima, Matheus Grossklags, Vinicius Zampronio, Fabio Cinti, and Alejandro Mendoza-Coto

Phys. Rev. A **111**, 063311 (2025) - Published 17 June, 2025

Optimal control in phase space applied to minimal-time transfer of thermal atoms in optical traps

Omar Morandi, Sara Nicoletti, Vladislav Gavryusev, and Leonardo Fallani

Phys. Rev. A **111**, 063312 (2025) - Published 20 June, 2025

Fate of the spatial-temporal order under quantum fluctuation

Xiaoqian Xie and Wei Zheng

Phys. Rev. A **111**, 063313 (2025) - Published 23 June, 2025

Three-body physics in the impurity limit of Bose-Einstein condensates

A. M. Morgen, S. S. Balling, M. T. Strøe, T. G. Skov, M. R. Skou, A. G. Volosniev, and J. J. Arlt

Phys. Rev. A **111**, 063314 (2025) - Published 24 June, 2025

Nonequilibrium quench dynamics of Bose-Einstein condensates of microwave-shielded polar molecules

Abdelâali Boudjemâa

Phys. Rev. A **111**, 063315 (2025) - Published 25 June, 2025

Solving the SU() orbital Hatsugai-Kohmoto model

Nico A. Hackner, Peizhi Mai, and Philip W. Phillips

Phys. Rev. A **111**, 063316 (2025) - Published 25 June, 2025

Interaction-induced moiré systems in twisted bilayer optical lattices

Jian-Hua Zeng, Qizhong Zhu, and Liang He

Phys. Rev. A **111**, 063317 (2025) - Published 25 June, 2025

Photonics, nonlinear optics, and optomechanics

Three-photon Rabi oscillations in lasing at 391 nm

Ping Li, Wenli Yang, Xiaofei Li, Shan Xue, Jinbin Li, and Hongchuan Du

Phys. Rev. A **111**, 063501 (2025) - Published 2 June, 2025

High-gain squeezing in lossy resonators: An asymptotic-field approach

M. Sloan, A. Viola, M. Liscidini, and J. E. Sipe

Phys. Rev. A **111**, 063502 (2025) - Published 2 June, 2025

Internal dynamics and fission of pure-quartic soliton molecules

Zhixiang Deng, Rui Ma, Chunxiang Zhang, Boris Malomed, Dianyuan Fan, Jingsong He, and Jun Liu

Phys. Rev. A **111**, 063503 (2025) - Published 3 June, 2025

Reinforcement-learning-assisted nonreciprocal optomechanical gyroscope

Qing-Shou Tan, Ya-Feng Jiao, Yunlan Zuo, Lan Xu, Jie-Qiao Liao, and Le-Man Kuang

Phys. Rev. A **111**, 063504 (2025) - Published 3 June, 2025

Bound states and chiral excitation in the effective Floquet continuum within tilted waveguide lattices

Tian-Ze Sheng, Li-Feng Liu, Ying Zhang, Jun Qian, Xiao-Lin Li, Yue-Ping Niu, and Shang-Qing Gong

Phys. Rev. A **111**, 063505 (2025) - Published 3 June, 2025

Optical pattern formation in self-focusing and self-defocusing diffractively thick media

G. Labeyrie, I. Krešić, R. Kaiser, and T. Ackemann

Phys. Rev. A **111**, 063506 (2025) - Published 4 June, 2025

Self-pulsing laser cavity solitons: Interaction dynamics and transverse carrier diffusion

M. Eslami, A.-R. Samadi, A. Ghaed Amini, R. Golzaran, R. Kheradmand, and F. Prati

Phys. Rev. A **111**, 063507 (2025) - Published 5 June, 2025

Bisingular surface polaritons at the interface of two uniaxial media

K. Yu. Golenitskii and N. S. Averkiev

Phys. Rev. A **111**, 063508 (2025) - Published 5 June, 2025

Dual-resonance metagrating for enhancing or annihilating third-harmonic generation at terahertz frequencies

Cong Wang, Songsong Li, Yu Chen, Qingjia Zhou, Jie Luo, Shaojun Wang, Lei Gao, and Yadong Xu

Phys. Rev. A **111**, 063509 (2025) - Published 6 June, 2025

Generalized polarization matrix approach to near-field optical chirality

Kayn A. Forbes and David L. Andrews

Phys. Rev. A **111**, 063510 (2025) - Published 9 June, 2025

Low-order-mode optical trapping of microspheres in hollow-core photonic crystal fibers

Alessandro Porcelli, Peter Sergio Kincaid, Antonio Alvaro Ranha Neves, Ennio Arimondo, Andrea Camposeo, Dario Pisignano, and Donatella Ciampini

Phys. Rev. A **111**, 063511 (2025) - Published 11 June, 2025

Optical force and torque on a spinning dielectric sphere

Hengzhi Li, Wanyue Xiao, Tong Fu, Zheng Yang, and Shubo Wang

Phys. Rev. A **111**, 063512 (2025) - Published 11 June, 2025

Highly sensitive temperature sensing via quadratic optomechanical coupling

Yu-Sheng Tang, Xun-Wei Xu, Jie-Qiao Liao, Hui Jing, and Le-Man Kuang

Phys. Rev. A **111**, 063513 (2025) - Published 12 June, 2025

Efficient chiral mode conversion in topological waveguide arrays by encircling moving exceptional points

Jia-Ning Zhang, Ming Gao, Jia-bao Yao, Cheng Lu, Pei-geng Zhong, Jie Song, and Yong-Yuan Jiang

Phys. Rev. A **111**, 063514 (2025) - Published 16 June, 2025

Spectral reorganization of space-time wave packets in the presence of normal group-velocity dispersion

Layton A. Hall and Ayman F. Abouraddy

Phys. Rev. A **111**, 063515 (2025) - Published 16 June, 2025

Tunable autofocusing and optical trapping with symmetric butterfly Gaussian beams

Yujie Wu, Ziping Zhang, Man Tao, Zhenhang Xu, Chuhong Zhuang, Zihan Liu, Zan Zhang, Weiting Wang, Hongwei Gong, Shigen Ouyang, and Dongmei Deng

Phys. Rev. A **111**, 063516 (2025) - Published 18 June, 2025

-wave formation in the subnanosecond backward-wave optical parametric oscillator

T. Latvys, J. Banys, V. Jarutis, J. Vengelis, and V. Tamulienė

Phys. Rev. A **111**, 063517 (2025) - Published 20 June, 2025

Time-reversal-symmetry bounds on electromagnetic fields

Wenchao Ma, Raphaël Pestourie, and Steven G. Johnson

Phys. Rev. A **111**, 063518 (2025) - Published 20 June, 2025

Enhanced tunable photon-pair generation from a nonlinear metasurface with a guided-mode cavity

Tongmiao Fan, Jihua Zhang, and Andrey A. Sukhorukov

Phys. Rev. A **111**, 063519 (2025) - Published 20 June, 2025

Nonreciprocal open quantum battery network in a photonic waveguide array

Yaowu Guo, Lianzhen Cao, and Jiaqiang Zhao

Phys. Rev. A **111**, 063520 (2025) - Published 20 June, 2025

Effect of temperature on the dynamic properties of extreme pulses in interband cascade lasers

X. Y. Zhu, W. Feng, J. C. Cao, and C. Wang

Phys. Rev. A **111**, 063521 (2025) - Published 23 June, 2025

Predicting microwave resonances in aqueous spheroids with a standing-wave approach

Yuchen Song, Miao Hu, and Aaron D. Slepkov

Phys. Rev. A **111**, 063522 (2025) - Published 23 June, 2025

Loss-free enhancement of photonic spin Hall shift by electromagnetically induced transparency

Aizaz Khan, Kezhou Du, Lei Gao, Muzamil Shah, Xinxing Zhou, and Dongliang Gao

Phys. Rev. A **111**, 063523 (2025) - Published 27 June, 2025

Quantum optics

Giant emitter magnetometer

Xiaojun Zhang, Xiang Guo, and Zhihai Wang

Phys. Rev. A **111**, 063701 (2025) - Published 2 June, 2025

Manipulating spectral transitions and photonic transmission in a non-Hermitian optical system through nanoparticle perturbations

Bo-Wang Zhang, Cheng Shang, J. Y. Sun, Zhuo-Cheng Gu, and X. X. Yi

Phys. Rev. A **111**, 063702 (2025) - Published 2 June, 2025

Mechanically induced magnonic frequency combs via the magnetostrictive effect

Bao Wang, Xiao-Hu Lu, Xiao Jia, and Hao Xiong

Phys. Rev. A **111**, 063703 (2025) - Published 3 June, 2025

Hierarchies of quantum non-Gaussian coherences for bosonic systems: A theoretical study

Lukáš Lachman, Beate E. Asenbeck, Ambroise Boyer, Priyanka Giri, Alban Urvoy, Julien Laurat, and Radim Filip

Phys. Rev. A **111**, 063704 (2025) - Published 11 June, 2025

Experimental investigation of the uncertainty relation in pre- and postselected systems

Yue Zhang, Xinyang Che, Yuanbang Wei, Rui Tian, Yi-an Li, Miao Zhang, Shuai Li, and Bo Liu

Phys. Rev. A **111**, 063705 (2025) - Published 11 June, 2025

Enhanced sensing by geometric tuning of YIG spheres: Noise reduction, signal amplification, and directional magnetic-field detection

Zheng Liu, Ding-Hui Xu, Yi-Jia Yang, and Chang-shui Yu

Phys. Rev. A **111**, 063706 (2025) - Published 13 June, 2025

Postselected von Neumann measurement with superpositions of orbital angular momentum pointer states

Janarbek Yuanbek, Yi-Fang Ren, and Yusuf Turek

Phys. Rev. A **111**, 063707 (2025) - Published 23 June, 2025

Anomalous dependence of sensitivity on observation time caused by memory retention in a system with broken time-translation symmetry

Timofey T. Sergeev, Alexander A. Zyablovsky, and Evgeny S. Andrianov

Phys. Rev. A **111**, 063708 (2025) - Published 23 June, 2025

Geometric phase and wave-particle duality of the photon

Elvis Pillinen, Atri Halder, Ari T. Friberg, Tero Setälä, and Andreas Norrman

Phys. Rev. A **111**, 063709 (2025) - Published 24 June, 2025

Theory of symmetry-protected two-photon coherence

Xuanying Lai, Shengwang Du, and Yue Jiang

Phys. Rev. A **111**, 063710 (2025) - Published 24 June, 2025

Realizing the optimal measurement scheme for an SU(1,1) interferometer in *ab initio* phase estimation

Mingchen Liu, Haixing Miao, and Lijian Zhang

Phys. Rev. A **111**, 063711 (2025) - Published 26 June, 2025

COMMENTS

Comment on "Association between quantum paradoxes based on weak values and a realistic interpretation of quantum measurements"

Juan José Seoane, Xabier Oianguren-Asua, Albert Solé, and Xavier Oriols

Phys. Rev. A **111**, 066201 (2025) - Published 2 June, 2025

Reply to "Comment on 'Association between quantum paradoxes based on weak values and a realistic interpretation of quantum measurements' "

Alice M. Aredes and Pablo L. Saldanha

Phys. Rev. A **111**, 066202 (2025) - Published 2 June, 2025

Comment on "Energy-level shift of quantum systems via the scalar electric Aharonov-Bohm effect"

Shan Gao

Phys. Rev. A **111**, 066203 (2025) - Published 13 June, 2025

Reply to "Comment on 'Energy-level shift of quantum systems via the scalar electric Aharonov-Bohm effect' "

R. Y. Chiao, H. Hart, M. Scheibner, J. Sharping, N. A. Inan, D. A. Singleton, and M. E. Tobar

Phys. Rev. A **111**, 066204 (2025) - Published 13 June, 2025

ERRATA

Erratum: Compression, spectral broadening, and collimation in multiple, femtosecond pulse filamentation in atmosphere [Phys. Rev. A 86, 033834 (2012)]

J. P. Palastro, T. M. Antonsen, Jr., and H. M. Milchberg

Phys. Rev. A **111**, 069901 (2025) - Published 12 June, 2025