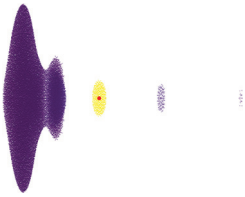

Spectrum of Liouvillian for eight spins with random two-body dissipation, showing clusters associated with different relaxation timescales and degrees of locality. Yellow: Eigenvalue cluster corresponding to three-body relaxation processes; Red dot: Prediction of perturbation theory. Selected for an Editors' Suggestion. [Kevin Wang, Francesco Piazza and David J. Luitz, Phys. Rev. Lett. **124**, 100604 (2020)]

NEWSPAPER

PHYSICAL REVIEW LETTERS

Contents

Articles published 7 March–13 March 2020

VOLUME 124, NUMBER 10 13 March 2020

General Physics: Statistical and Quantum Mechanics, Quantum Information, etc.

Quantum Overlapping Tomography 100401
Jordan Cotler and Frank Wilczek
Classification of Matrix-Product Unitaries with Symmetries 100402
Zongping Gong, Christoph Sünderhauf, Norbert Schuch, and J. Ignacio Cirac
Chain Rule for the Quantum Relative Entropy 100501
Kun Fang, Omar Fawzi, Renato Renner, and David Sutter
Regimes of Classical Simulability for Noisy Gaussian Boson Sampling 100502
Haoyu Qi, Daniel J. Brod, Nicolás Quesada, and Raúl García-Patrón
$T\bar{T}$ Deformations and Integrable Spin Chains 100601
Enrico Marchetto, Alessandro Sfondrini, and Zhou Yang
Probing Thermalization through Spectral Analysis with Matrix Product Operators 100602
Yilun Yang, Sofyan Iblisdir, J. Ignacio Cirac, and Mari Carmen Bañuls
Maxwell's Lesser Demon: A Quantum Engine Driven by Pointer Measurements 100603
Stella Seah, Stefan Nimmrichter, and Valerio Scarani
Hierarchy of Relaxation Timescales in Local Random Liouvillians 100604
Kevin Wang, Francesco Piazza, and David J. Luitz
Entanglement Hamiltonian of Many-Body Dynamics in Strongly Correlated Systems 100605
W. Zhu, Zhoushen Huang, Yin-Chen He, and Xueda Wen

Gravitation and Astrophysics

New Test of the Gravitational $1/r^2$ Law at Separations down to 52 μm 101101
J. G. Lee, E. G. Adelberger, T. S. Cook, S. M. Fleischer, and B. R. Heckel
Detection of Cross-Correlation between Gravitational Lensing and γ Rays 101102
S. Ammazzalorso *et al.*
Universal Relation between Corrections to Entropy and Extremality 101103
Garrett Goon and Riccardo Penco
Extracting the Gravitational Recoil from Black Hole Merger Signals 101104
Vijay Varma, Maximiliano Isi, and Sylvia Biscoveanu
Quantum Break in High Intensity Gravitational Wave Interactions 101301
R. F. Sawyer
Probing Primordial Chirality with Galaxy Spins 101302
Hao-Ran Yu, Pavel Motloch, Ue-Li Pen, Yu Yu, Huiyuan Wang, Houjun Mo, Xiaohu Yang, and Yipeng Jing
Extended Search for the Invisible Axion with the Axion Dark Matter Experiment 101303
T. Braine *et al.* (ADMX Collaboration)

(Continued Inside)

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. Lett. 98, 010001 (2007).

Copyright 2020 American Physical Society

0031-9007(20200313)124:10;1-2

Elementary Particles and Fields

Kaluza-Klein Spectrometry for Supergravity 101601
Emanuel Malek and Henning Samtleben

Renormalized Circuit Complexity 101602
Arpan Bhattacharyya, Pratik Nandy, and Aninda Sinha

All Order α' Expansion of One-Loop Open-String Integrals 101603
Carlos R. Mafra and Oliver Schlotterer

Manifestly Lorentz Invariant Chiral Boson Action 101604
Paul K. Townsend

Cornering Higgsinos Using Soft Displaced Tracks 101801
Hajime Fukuda, Natsumi Nagata, Hideyuki Oide, Hidetoshi Otono, and Satoshi Shirai

Axion Dark Matter Search around 6.7 μeV 101802
S. Lee, S. Ahn, J. Choi, B. R. Ko, and Y. K. Semertzidis

New Bounds from Positronium Decays on Massless Mirror Dark Photons 101803
C. Vigo, L. Gerchow, B. Radics, M. Raaijmakers, A. Rubbia, and P. Crivelli

Nuclear Physics

Early- and Late-Time Behavior of Attractors in Heavy-Ion Collisions 102301
Aleksi Kurkela, Wilke van der Schee, Urs Achim Wiedemann, and Bin Wu

Swelling of Doubly Magic ^{48}Ca Core in Ca Isotopes beyond $N = 28$ 102501
M. Tanaka *et al.*

Atomic, Molecular, and Optical Physics

Experimental Separation of Subcycle Ionization Bursts in Strong-Field Double Ionization of H_2 103201
Václav Hanus, Sarayoo Kangaparambil, Seyedreza Larimian, Martin Dorner-Kirchner, Xinhua Xie (谢新华), Markus S. Schöffler, Gerhard G. Paulus, Andrius Baltuška, André Staudte, and Markus Kitzler-Zeiler

Complex Density Wave Orders and Quantum Phase Transitions in a Model of Square-Lattice Rydberg Atom Arrays 103601
Rhine Samajdar, Wen Wei Ho, Hannes Pichler, Mikhail D. Lukin, and Subir Sachdev

Ground-State Cooling and High-Fidelity Quantum Transduction via Parametrically Driven Bad-Cavity Optomechanics 103602
Hoi-Kwan Lau and Aashish A. Clerk

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Dual Coaxial Longitudinal Polarization Vortex Structures 103901
Zhongsheng Man, Zheng Xi, Xiaocong Yuan, R. E. Burge, and H. Paul Urbach

Polarization-Controlled Cavity Input-Output Relations 103902
Fuchuan Lei, Jonathan M. Ward, Priscila Romagnoli, and Síle Nic Chormaic

Discovering Topological Surface States of Dirac Points 104301
Hengbin Cheng, Yixin Sha, Rongjuan Liu, Chen Fang, and Ling Lu

Energy Transfer from Large to Small Scales in Turbulence by Multiscale Nonlinear Strain and Vorticity Interactions 104501
Perry L. Johnson

Transition from Exponentially Damped to Finite-Time Arrest Liquid Oscillations Induced by Contact Line Hysteresis 104502
Benjamin Dollet, Élise Lorenceau, and François Gallaire

Plasma and Beam Physics

Suppression of Deflecting Forces in Planar-Symmetric Dielectric Wakefield Accelerating Structures with Elliptical Bunches 104801
Brendan D. O'Shea, Gerard Andonian, S. S. Baturin, Christine I. Clarke, P. D. Hoang, Mark J. Hogan, Brian Naranjo, Oliver B. Williams, Vitaly Yakimenko, and James B. Rosenzweig

(Continued on Preceding Page)

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. Lett. 98, 010001 (2007)

Radio Emission Reveals Inner Meter-Scale Structure of Negative Lightning Leader Steps 105101
B. M. Hare, O. Scholten, J. Dwyer, U. Ebert, S. Nijdam, A. Bonardi, S. Buitink, A. Corstanje, H. Falcke, T. Huege, J. R. Hörandel, G. K. Krampah, P. Mitra, K. Mulrey, B. Neijzen, A. Nelles, H. Pandya, J. P. Rachen, L. Rossetto, T. N. G. Trinh, S. ter Veen, and T. Winchen

Condensed Matter: Structure, etc.

Morphological Superfluid in a Nonmagnetic Spin-2 Bose-Einstein Condensate 105301
Emi Yukawa and Masahito Ueda

Torque and Angular-Momentum Transfer in Merging Rotating Bose-Einstein Condensates 105302
Toshiaki Kanai, Wei Guo, Makoto Tsubota, and Dafei Jin

Symmetry-Protected Topological Triangular Weyl Complex 105303
R. Wang, B. W. Xia, Z. J. Chen, B. B. Zheng, Y. J. Zhao, and H. Xu

Nonempirical Free Volume Viscosity Model for Alkane Lubricants under Severe Pressures 105501
Kerstin Falk, Daniele Savio, and Michael Moseler

Role of Thermal Equilibrium Dynamics in Atomic Motion during Nonthermal Laser-Induced Melting 105701
Xiaocui Wang, J. C. Ekström, Å. U. J. Bengtsson, A. Jarnac, A. Jurgilaitis, Van-Thai Pham, D. Kroon, H. Enquist, and J. Larsson

Phonon Thermal Hall Effect in Strontium Titanate 105901
Xiaokang Li, Benoît Fauqué, Zengwei Zhu, and Kamran Behnia

Observation of Drastic Electronic-Structure Change in a One-Dimensional Moiré Superlattice 106101
Sihan Zhao, Pilkyung Moon, Yuhei Miyauchi, Taishi Nishihara, Kazunari Matsuda, Mikito Koshino, and Ryo Kitaura

Interplay of Chemistry and Faceting at Grain Boundaries in a Model Al Alloy 106102
Huan Zhao, Liam Huber, Wenjun Lu, Nicolas J. Peter, Dayong An, Frédéric De Geuser, Gerhard Dehm, Dirk Ponge, Jörg Neugebauer, Baptiste Gault, and Dierk Raabe

Meron Spin Textures in Momentum Space 106103
Cheng Guo, Meng Xiao, Yu Guo, Luqi Yuan, and Shanhui Fan

Nucleation of Dislocations in 3.9 nm Nanocrystals at High Pressure 106104
Abhinav Parakh, Sangryun Lee, K. Anika Harkins, Mehrdad T. Kiani, David Doan, Martin Kunz, Andrew Doran, Lindsey A. Hanson, Seunghwa Ryu, and X. Wendy Gu

Measuring Dynamic Structural Changes of Nanoparticles at the Atomic Scale Using Scanning Transmission Electron Microscopy 106105
Annelies De wael, Annick De Backer, Lewys Jones, Aakash Varambhia, Peter D. Nellist, and Sandra Van Aert

Condensed Matter: Electronic Properties, etc.

Periodically Driven Sachdev-Ye-Kitaev Models 106401
Clemens Kuhlenkamp and Michael Knap

Bulk and Surface Electronic Structure of the Dual-Topology Semimetal Pt_2HgSe_3 106402
I. Cucchi, A. Marrazzo, E. Cappelli, S. Riccò, F. Y. Bruno, S. Lisi, M. Hoesch, T. K. Kim, C. Cacho, C. Besnard, E. Giannini, N. Marzari, M. Gibertini, F. Baumberger, and A. Tamai

Inelastic Electron Tunneling in 2H-$Ta_xNb_{1-x}Se_2$ Evidenced by Scanning Tunneling Spectroscopy 106403
Xing-Yuan Hou, Fan Zhang, Xin-Hai Tu, Ya-Dong Gu, Meng-Di Zhang, Jing Gong, Yu-Bing Tu, Bao-Tian Wang, Wen-Gang Lv, Hong-Ming Weng, Zhi-An Ren, Gen-Fu Chen, Xiang-De Zhu, Ning Hao, and Lei Shan

Nonlinear Thermoelectricity with Electron-Hole Symmetric Systems 106801
G. Marchegiani, A. Braggio, and F. Giazotto

Valley Polarization and Inversion in Strained Graphene via Pseudo-Landau Levels, Valley Splitting of Real Landau Levels, and Confined States 106802
Si-Yu Li, Ying Su, Ya-Ning Ren, and Lin He

Particle-Hole Duality, Emergent Fermi Liquids, and Fractional Chern Insulators in Moiré Flatbands 106803
Ahmed Abouelkomsan, Zhao Liu, and Emil J. Bergholtz

(Continued on Preceding Page)

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. Lett. 98, 010001 (2007)

Ab Initio Mismatched Interface Theory of Graphene on α-$RuCl_3$: Doping and Magnetism 106804
Eli Gerber, Yuan Yao, Tomas A. Arias, and Eun-Ah Kim
Flux Superperiods and Periodicity Transitions in Quantum Hall Interferometers 106805
Bernd Rosenow and Ady Stern
Evidence for an Fulde-Ferrell-Larkin-Ovchinnikov State with Segmented Vortices in the BCS-BEC-Crossover Superconductor FeSe 107001
S. Kasahara, Y. Sato, S. Licciardello, M. Čulo, S. Arsenijević, T. Ottenbros, T. Tominaga, J. Böker, I. Eremin, T. Shibauchi, J. Wosnitza, N. E. Hussey, and Y. Matsuda
Probing the Source of the Interfacial Dzyaloshinskii-Moriya Interaction Responsible for the Topological Hall Effect in Metal/$Tm_3Fe_5O_{12}$ Systems 107201
Aidan J. Lee, Adam S. Ahmed, Jose Flores, Side Guo, Binbin Wang, Nuria Bagués, David W. McComb, and Fengyuan Yang
Magnon Accumulation in Chirally Coupled Magnets 107202
Tao Yu, Yu-Xiang Zhang, Sanchar Sharma, Xiang Zhang, Yaroslav M. Blanter, and Gerrit E. W. Bauer
Antiadiabatic View of Fast Environmental Effects on Optical Spectra 107401
D. K. Andrea Phan Huu, Rama Dhali, Carlotta Pieroni, Francesco Di Maiolo, Cristina Sissa, Francesca Terenziani, and Anna Painelli
Domain Dynamics under Ultrafast Electric-Field Pulses 107601
Tiannan Yang, Bo Wang, Jia-Mian Hu, and Long-Qing Chen

Polymer, Soft Matter, Biological, Climate, and Interdisciplinary Physics

Self-Propulsion of Active Colloids via Ion Release: Theory and Experiments 108001
Marco De Corato, Xavier Arqué, Tania Patiño, Marino Arroyo, Samuel Sánchez, and Ignacio Pagonabarraga
Extrinsic Noise and Heavy-Tailed Laws in Gene Expression 108101
Lucy Ham, Rowan D. Brackston, and Michael P. H. Stumpf
Ordered Lipid Domains Assemble via Concerted Recruitment of Constituents from Both Membrane Leaflets 108102
Ali Saitov, Sergey A. Akimov, Timur R. Galimzyanov, Toma Glasnov, and Peter Pohl
Geometry of Energy Landscapes and the Optimizability of Deep Neural Networks 108301
Simon Becker, Yao Zhang, and Alpha A. Lee

Comments

Comment on "Apical Charge Flux-Modulated In-Plane Transport Properties of Cuprate Superconductors" 109701
E. Pavarini, I. Dasgupta, T. Saha-Dasgupta, and O. K. Andersen
Li *et al.* Reply 109702
Xin Li, Sooran Kim, Xi Chen, and William Fitzhugh

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. Lett. 98, 010001 (2007).

Physics
spotlighting exceptional research

The American Physical Society's free online publication, *Physics* (physics.aps.org), provides thought-provoking analysis and spotlights exceptional research.