

# PHYSICAL REVIEW B

For editorial and subscription correspondence,  
please see inside front cover  
(ISSN: 1098-0121)

## PERIODICALS

Postmaster send address changes to:  
APS Subscription Services  
Suite 1N01  
2 Huntington Quadrangle  
Melville, NY 11747-4502

THIRD SERIES, VOLUME 76, NUMBER 6

CONTENTS

AUGUST 2007-1(II)

### RAPID COMMUNICATIONS

#### Structure, structural phase transitions, mechanical properties, defects

- Quasivertical line in the phase diagram of single crystals of  $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3-x\text{PbTiO}_3$  ( $x=0.00, 0.06, 0.13$ , and  $0.24$ ) with a giant piezoelectric effect (*4 pages*) ..... 060101(R)  
S. I. Raevskaya, A. S. Emelyanov, F. I. Savenko, M. S. Panchelyuga, I. P. Raevski, S. A. Prosandeev, Eugene V. Colla, Haydn Chen, S. G. Lu, R. Blinc, Z. Kutnjak, P. Gemeiner, B. Dkhil, and L. S. Kamzina

- Full-potential multiple scattering for x-ray spectroscopies (*4 pages*) ..... 060102(R)  
Keisuke Hatada, Kuniko Hayakawa, Maurizio Benfatto, and Calogero R. Natoli

#### Magnetism

- Exotic gapless spectrum induced by frustration in quantum antiferromagnets (*4 pages*) ..... 060401(R)  
Federico Becca, Luca Capriotti, Alberto Parola, and Sandro Sorella

- Incommensurate magnetic structure in the orthorhombic perovskite  $\text{ErMnO}_3$  (*4 pages*) ..... 060402(R)  
F. Ye, B. Lorenz, Q. Huang, Y. Q. Wang, Y. Y. Sun, C. W. Chu, J. A. Fernandez-Baca, Pengcheng Dai, and H. A. Mook

- Microscopic aspect of interface magnetic anisotropy induced by a Pd adlayer on  $\text{Ni/Cu}(001)$  films (*4 pages*) ..... 060403(R)  
J.-S. Lee, J.-Y. Kim, J. H. Shim, B. I. Min, K.-B. Lee, and J.-H. Park

- Colossal magnon-phonon coupling in multiferroic  $\text{Eu}_{0.75}\text{Y}_{0.25}\text{MnO}_3$  (*4 pages*) ..... 060404(R)  
R. Valdés Aguilar, A. B. Sushkov, C. L. Zhang, Y. J. Choi, S.-W. Cheong, and H. D. Drew

- Magnetic exponents of two-dimensional Ising spin glasses (*4 pages*) ..... 060405(R)  
F. Liers and O. C. Martin

- Thermodynamics of the up-up-down phase of the  $S=\frac{1}{2}$  triangular-lattice antiferromagnet  $\text{Cs}_2\text{CuBr}_4$  (*4 pages*) ..... 060406(R)  
H. Tsujii, C. R. Rotundu, T. Ono, H. Tanaka, B. Andraka, K. Ingersent, and Y. Takano

- Multimagnon bound states in the frustrated ferromagnetic one-dimensional chain (*4 pages*) ..... 060407(R)  
Lars Kecke, Tsutomu Momoi, and Akira Furusaki

- Sum rules for electron energy loss near edge spectra (*4 pages*) ..... 060408(R)  
Ján Rusz, Olle Eriksson, Pavel Novák, and Peter M. Oppeneer



Copyright 2007 by The American Physical Society

(Continued)



1098-0121(20070801)76:6;1-#

|                                                                                                                 |           |
|-----------------------------------------------------------------------------------------------------------------|-----------|
| Experimental application of sum rules for electron energy loss magnetic chiral dichroism (4 pages) . . . . .    | 060409(R) |
| L. Calmels, F. Houdellier, B. Warot-Fonrose, C. Gatel, M. J. Hÿtch, V. Serin, E. Snoeck, and P. Schattschneider |           |

**Superfluidity and superconductivity**

|                                                                                                                            |           |
|----------------------------------------------------------------------------------------------------------------------------|-----------|
| Effect of substituting Fe and Ru for Ni on the thermopower of MgCNi <sub>3</sub> (4 pages) . . . . .                       | 060501(R) |
| C. Sulkowski, T. Klimczuk, R. J. Cava, and K. Rogacki                                                                      |           |
| Fermi arcs in cuprate superconductors: Tracking the pseudogap below $T_c$ and above $T^*$ (4 pages) . . . . .              | 060502(R) |
| J. G. Storey, J. L. Tallon, G. V. M. Williams, and J. W. Loram                                                             |           |
| Magnetic confinement of the superconducting condensate in superconductor-ferromagnet hybrid composites (4 pages) . . . . . | 060503(R) |
| W. Gillijns, A. Yu. Aladyshkin, A. V. Silhanek, and V. V. Moshchalkov                                                      |           |
| Long range triplet Josephson effect through a ferromagnetic trilayer (4 pages) . . . . .                                   | 060504(R) |
| M. Houzet and A. I. Buzdin                                                                                                 |           |

**ARTICLES****Structure, structural phase transitions, mechanical properties, defects**

|                                                                                                                                                                              |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Structure of the metallic $\zeta$ -phase of oxygen and isosymmetric nature of the $\varepsilon$ - $\zeta$ phase transition: <i>Ab initio</i> simulations (5 pages) . . . . . | 064101 |
| Yanming Ma, Artem R. Oganov, and Colin W. Glass                                                                                                                              |        |
| Infrared study of 1,3,5-triamino-2,4,6-trinitrobenzene under high pressure (4 pages) . . . . .                                                                               | 064102 |
| Michael Pravica, Brian Yulga, Zhenxian Liu, and Oliver Tschauner                                                                                                             |        |
| High-pressure phase of GaP: Structure and chemical ordering (7 pages) . . . . .                                                                                              | 064103 |
| G. Aquilanti, H. Libotte, W. A. Crichton, S. Pascarelli, A. Trapananti, and J.-P. Itié                                                                                       |        |
| Ferroelectric phase transition of stoichiometric lithium tantalate studied by Raman, Brillouin, and neutron scattering (8 pages) . . . . .                                   | 064104 |
| Anwar Hushur, Severian Gvasaliya, Bertrand Roessli, Sergey Lushnikov, and Seiji Kojima                                                                                       |        |
| Hysteresis in a system driven by either generalized force or displacement variables: Martensitic phase transition in single-crystalline Cu-Zn-Al (5 pages) . . . . .         | 064105 |
| Erell Bonnot, Ricardo Romero, Xavier Illa, Lluís Mañosa, Antoni Planes, and Eduard Vives                                                                                     |        |
| Modeling of hydrogen storage in hydride-forming materials: Equilibrium gas-phase kinetics (16 pages) . . . . .                                                               | 064106 |
| A. Ledovskikh, D. Danilov, and P. H. L. Notten                                                                                                                               |        |
| Shock-induced polarization in distilled water (9 pages) . . . . .                                                                                                            | 064107 |
| Yu. Skryl, Anna A. Belak, and Maija M. Kuklja                                                                                                                                |        |
| Influence of carrier density on the friction properties of silicon <i>pn</i> junctions (7 pages) . . . . .                                                                   | 064108 |
| Jeong Young Park, Yabing Qi, D. F. Ogletree, P. A. Thiel, and M. Salmeron                                                                                                    |        |
| Molecular dynamics study of two-dimensional melting transition in copper via the embedded atom method (7 pages) . . . . .                                                    | 064109 |
| H. Pang, Q. Pan, and P. H. Song                                                                                                                                              |        |
| Interaction between hydrogen and the alloying atom in palladium (5 pages) . . . . .                                                                                          | 064110 |
| Y. J. Li, S. E. Kulkova, Q. M. Hu, D. I. Bazhanov, D. S. Xu, Y. L. Hao, and R. Yang                                                                                          |        |

|                                                                                                                                                                    |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Coble creep in heterogeneous materials: The role of grain boundary engineering (13 pages) . . . . .                                                                | 064111 |
| Ying Chen and Christopher A. Schuh                                                                                                                                 |        |
| Atomic-level view of inelastic deformation in a shock loaded molecular crystal (6 pages) . . . . .                                                                 | 064112 |
| Eugenio Jaramillo, Thomas D. Sewell, and Alejandro Strachan                                                                                                        |        |
| Application of optimization technique to noncrystalline x-ray diffraction microscopy: Guided hybrid input-output method (5 pages) . . . . .                        | 064113 |
| Chien-Chun Chen, Jianwei Miao, C. W. Wang, and T. K. Lee                                                                                                           |        |
| Intermediate regime in pressure-induced neutral-ionic transition in tetrathiafulvalene-chloranil (7 pages) . . . . .                                               | 064114 |
| Matteo Masino, Alberto Girlando, and Aldo Brillante                                                                                                                |        |
| Indentation of spherical and conical punches into piezoelectric half-space with frictional sliding: Applications to scanning probe microscopy (14 pages) . . . . . | 064115 |
| Arty Makagon, Mark Kachanov, Sergei V. Kalinin, and Edgar Karapetian                                                                                               |        |
| First-principles prediction of crystal structures at high temperatures using the quasiharmonic approximation (5 pages) . . . . .                                   | 064116 |
| Pierre Carrier, Renata Wentzcovitch, and Jun Tsuchiya                                                                                                              |        |
| Role of micropipes in the formation of pores at foreign polytype boundaries in SiC crystals (9 pages) . . . . .                                                    | 064117 |
| M. Yu. Gutkin, A. G. Sheinerman, T. S. Argunova, J. M. Yi, J. H. Je, S. S. Nagalyuk, E. N. Mokhov, G. Margaritondo, and Y. Hwu                                     |        |
| Chemical bonding effect of Ge atoms on B diffusion in Si (7 pages) . . . . .                                                                                       | 064118 |
| Junhyeok Bang, Joongoo Kang, Woo-Jin Lee, K. J. Chang, and Hanchul Kim                                                                                             |        |
| X-ray charge density study of chemical bonding in skutterudite CoSb <sub>3</sub> (6 pages) . . . . .                                                               | 064119 |
| Atsuko Ohno, Satoshi Sasaki, Eiji Nishibori, Shinobu Aoyagi, Makoto Sakata, and Bo Brummerstedt Iversen                                                            |        |
| <i>Ab initio</i> calculation of ideal strength and phonon instability of graphene under tension (7 pages) . . . . .                                                | 064120 |
| Fang Liu, Pingbing Ming, and Ju Li                                                                                                                                 |        |
| Properties of the fcc Lennard-Jones crystal model at the limit of superheating (7 pages) . . . . .                                                                 | 064121 |
| A. B. Belonoshko, S. Davis, N. V. Skorodumova, P. H. Lundow, A. Rosengren, and B. Johansson                                                                        |        |
| Neutron and x-ray diffraction study of cubic [111] field-cooled Pb(Mg <sub>1/3</sub> Nb <sub>2/3</sub> )O <sub>3</sub> (11 pages) . . . . .                        | 064122 |
| C. Stock, Guangyong Xu, P. M. Gehring, H. Luo, X. Zhao, H. Cao, J. F. Li, D. Viehland, and G. Shirane                                                              |        |
| Crystal structure of SiH <sub>4</sub> at high pressure (4 pages) . . . . .                                                                                         | 064123 |
| Olga Degtyareva, Miguel Martínez Canales, Aitor Bergara, Xiao-Jia Chen, Yang Song, Viktor V. Struzhkin, Ho-kwang Mao, and Russell J. Hemley                        |        |
| <b>Inhomogeneous, disordered, and partially ordered systems</b>                                                                                                    |        |
| Primary and secondary relaxation time dispersions in fragile supercooled liquids (8 pages) . . . . .                                                               | 064201 |
| Li-Min Wang and Ranko Richert                                                                                                                                      |        |
| Mode-locking transitions in nanostructured weakly disordered lasers (10 pages) . . . . .                                                                           | 064202 |
| L. Angelani, C. Conti, L. Prignano, G. Ruocco, and F. Zamponi                                                                                                      |        |
| Effective properties of spherically anisotropic piezoelectric composites (6 pages) . . . . .                                                                       | 064203 |
| G. Q. Gu, En-Bo Wei, Y. M. Poon, and F. G. Shin                                                                                                                    |        |

|                                                                                                                                                                                           |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Experiments and simulations on Al-Au mixtures and mixtures laws (8 pages) . . . . .                                                                                                       | 064204 |
| Jean Cl  rouin, Vanina Recoules, St  phane Mazevet, Pierre Noiret, and Patrick Renaudin                                                                                                   |        |
| Dynamical scaling of the structure factor for mesoscopic structures with non-Euclidean fractal morphology (8 pages) . . . . .                                                             | 064205 |
| S. Mazumder, R. Loidl, and H. Rauch                                                                                                                                                       |        |
| Vibrational instability, two-level systems, and the boson peak in glasses (16 pages) . . . . .                                                                                            | 064206 |
| D. A. Parshin, H. R. Schober, and V. L. Gurevich                                                                                                                                          |        |
| First-principles investigation of metal-hydride phase stability: The Ti-H system (12 pages) . . . . .                                                                                     | 064207 |
| Qingchuan Xu and Anton Van der Ven                                                                                                                                                        |        |
| <b>Dynamics, dynamical systems, lattice effects, quantum solids</b>                                                                                                                       |        |
| Spin echo without an external permanent magnetic field (6 pages) . . . . .                                                                                                                | 064301 |
| Joakim Bergli and Leonid Glazman                                                                                                                                                          |        |
| Lattice dynamics of $\alpha$ -AlH <sub>3</sub> and $\alpha$ -AlD <sub>3</sub> by inelastic neutron scattering: High-energy band of optical bond-stretching vibrations (7 pages) . . . . . | 064302 |
| A. I. Kolesnikov, V. E. Antonov, Yu. E. Markushkin, I. Natkaniec, and M. K. Sakharov                                                                                                      |        |
| Interpreting atomic-resolution spectroscopic images (8 pages) . . . . .                                                                                                                   | 064303 |
| M. P. Oxley, M. Varela, T. J. Pennycook, K. van Benthem, S. D. Findlay, A. J. D'Alfonso, L. J. Allen, and S. J. Pennycook                                                                 |        |
| Measuring the absolute Raman cross section of nanographites as a function of laser energy and crystallite size (7 pages) . . . . .                                                        | 064304 |
| L. G. Can  ado, A. Jorio, and M. A Pimenta                                                                                                                                                |        |
| Two-mode squeezed states and entangled states of two mechanical resonators (9 pages) . . . . .                                                                                            | 064305 |
| Fei Xue, Yu-xi Liu, C. P. Sun, and Franco Nori                                                                                                                                            |        |
| Dephasing of a quantum dot due to the Coulomb interaction with a gate electrode (8 pages) . . . . .                                                                                       | 064306 |
| S. R. Woodford, A. Bringer, and K. M. Indlekofer                                                                                                                                          |        |
| First-principles study of lattice dynamics and thermodynamic properties of LaCl <sub>3</sub> and LaBr <sub>3</sub> (7 pages) . . . . .                                                    | 064307 |
| Bo Liu, Mu Gu, Zeming Qi, Xiaolin Liu, Shiming Huang, and Chen Ni                                                                                                                         |        |
| Characteristic lengths measured by incoherent elastic and quasielastic neutron scattering within the thermal hysteresis loop in a ferroelectric copolymer (6 pages) . . . . .             | 064308 |
| E. Lopez Cabarcos, A. F. Bra  a, B. Frick, and F. Batallan                                                                                                                                |        |
| <b>Magnetism</b>                                                                                                                                                                          |        |
| Compact approximate solution to the Kondo problem (10 pages) . . . . .                                                                                                                    | 064401 |
| Gerd Bergmann and Liye Zhang                                                                                                                                                              |        |
| Interaction-induced adiabatic cooling for antiferromagnetism in optical lattices (10 pages) . . . . .                                                                                     | 064402 |
| A.-M. Dar  , L. Raymond, G. Albinet, and A.-M. S. Tremblay                                                                                                                                |        |
| Spin waves in the ferromagnetic metallic manganites La <sub>1-x</sub> (Ca <sub>1-y</sub> Sr <sub>y</sub> ) <sub>x</sub> MnO <sub>3</sub> (9 pages) . . . . .                              | 064403 |
| F. Moussa, M. Hennion, P. Kober-Lehouelleur, D. Reznik, S. Petit, H. Moudden, A. Ivanov, Ya. M. Mukovskii, R. Privezentsev, and F. Albenque-Rullier                                       |        |
| Crystal structure, chemical bonding, electrical transport, and magnetic behavior of TmAlB <sub>4</sub> (10 pages) . . . . .                                                               | 064404 |
| T. Mori, H. Borrmann, S. Okada, K. Kudou, A. Leite-Jasper, U. Burkhardt, and Yu. Grin                                                                                                     |        |

|                                                                                                                                                                                        |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Extracting signatures of quantum criticality in the finite-temperature behavior of many-body systems<br>(9 pages) .....                                                                | 064405 |
| Alessandro Cuccoli, Alessio Taiti, Ruggero Vaia, and Paola Verrucchi                                                                                                                   |        |
| Orbital magnetization and its effects in spin-chiral ferromagnetic kagomé lattice (7 pages) .....                                                                                      | 064406 |
| Zhigang Wang and Ping Zhang                                                                                                                                                            |        |
| Effect of antiferromagnetic exchange interactions on the Glauber dynamics of one-dimensional Ising models<br>(13 pages) .....                                                          | 064407 |
| M. G. Pini and A. Rettori                                                                                                                                                              |        |
| Unconventional ferrimagnetic ordering of Ce in the anisotropic metal CeCrSb <sub>3</sub> (5 pages) .....                                                                               | 064408 |
| D. D. Jackson, S. K. McCall, A. B. Karki, and D. P. Young                                                                                                                              |        |
| Magnetic coupling in CoCr <sub>2</sub> O <sub>4</sub> and MnCr <sub>2</sub> O <sub>4</sub> : An LSDA+U study (9 pages) .....                                                           | 064409 |
| Claude Ederer and Matej Komelj                                                                                                                                                         |        |
| Coexistence of spin-glass and ferromagnetic order in the $\pm J$ Heisenberg spin-glass model (5 pages) .....                                                                           | 064410 |
| A. D. Beath and D. H. Ryan                                                                                                                                                             |        |
| Spin-polarized scanning tunneling microscopy and spectroscopy of ferromagnetic Dy(0001)/W(110) films<br>(10 pages) .....                                                               | 064411 |
| L. Berbil-Bautista, S. Krause, M. Bode, and R. Wiesendanger                                                                                                                            |        |
| Density functional study of multiferroic Bi <sub>2</sub> NiMnO <sub>6</sub> (6 pages) .....                                                                                            | 064412 |
| Adrian Ciucivara, Bhagawan Sahu, and Leonard Kleinman                                                                                                                                  |        |
| Contractor-renormalization approach to frustrated magnets in a magnetic field (12 pages) .....                                                                                         | 064413 |
| A. Abendschein and S. Capponi                                                                                                                                                          |        |
| Magnetic moment of Fe in oxide-free FePt nanoparticles (7 pages) .....                                                                                                                 | 064414 |
| O. Dmitrieva, M. Spasova, C. Antoniak, M. Acet, G. Dumpich, J. Kästner, M. Farle, K. Fauth,<br>U. Wiedwald, H.-G. Boyen, and P. Ziemann                                                |        |
| Long-range effects in layered spin structures (4 pages) .....                                                                                                                          | 064415 |
| Alessandro Campa, Ramaz Khomeriki, David Mukamel, and Stefano Ruffo                                                                                                                    |        |
| Effective anisotropies and energy barriers of magnetic nanoparticles with Néel surface anisotropy<br>(13 pages) .....                                                                  | 064416 |
| R. Yanes, O. Chubykalo-Fesenko, H. Kachkachi, D. A. Garanin, R. Evans, and R. W. Chantrell                                                                                             |        |
| <i>Ab initio</i> theory of temperature dependence of magnetic anisotropy in layered systems: Applications to thin Co<br>films on Cu(100) (7 pages) .....                               | 064417 |
| Á. Buruzs, P. Weinberger, L. Szunyogh, L. Udvardi, P. I. Chleboun, A. M. Fischer, and J. B. Staunton                                                                                   |        |
| Low-temperature specific heat and possible gap to magnetic excitations in the Heisenberg pyrochlore<br>antiferromagnet Gd <sub>2</sub> Sn <sub>2</sub> O <sub>7</sub> (11 pages) ..... | 064418 |
| Adrian Del Maestro and Michel J. P. Gingras                                                                                                                                            |        |
| Effect of temperature on quantum criticality in the frustrated two-leg Heisenberg ladder (12 pages) .....                                                                              | 064419 |
| Brandon W. Ramakko and Mohamed Azzouz                                                                                                                                                  |        |
| Magnetic excitations in the spin-trimer compounds Ca <sub>3</sub> Cu <sub>3-x</sub> Ni <sub>x</sub> (PO <sub>4</sub> ) <sub>4</sub> ( $x=0,1,2$ ) (9 pages) .....                      | 064420 |
| A. Podlesnyak, V. Pomjakushin, E. Pomjakushina, K. Conder, and A. Furrer                                                                                                               |        |
| Finite-size scaling of pseudocritical point distributions in the random transverse-field Ising chain<br>(5 pages) .....                                                                | 064421 |
| Ferenc Igloi, Yu-Cheng Lin, Heiko Rieger, and Cécile Monthus                                                                                                                           |        |

|                                                                                                                                                                                                                                        |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Structure-driven remanent high-spin state in metallosupramolecular assemblies (6 pages) . . . . .                                                                                                                                      | 064422 |
| Y. Bodenthin, G. Schwarz, Z. Tomkowicz, A. Nefedov, M. Lommel, H. Möhwald, W. Haase,<br>D. G. Kurth, and U. Pietsch                                                                                                                    |        |
| Impurity spin textures across conventional and deconfined quantum critical points of two-dimensional<br>antiferromagnets (16 pages) . . . . .                                                                                          | 064423 |
| Max A. Metlitski and Subir Sachdev                                                                                                                                                                                                     |        |
| Heat capacity and magnetic properties of a $\text{EuVO}_3$ single crystal (5 pages) . . . . .                                                                                                                                          | 064424 |
| L. D. Tung, M. R. Lees, G. Balakrishnan, and D. McK. Paul                                                                                                                                                                              |        |
| Magnetic and crystal structures of the polymorphic $\text{Pr}_5\text{Si}_2\text{Ge}_2$ compound (10 pages) . . . . .                                                                                                                   | 064425 |
| Y. C. Wang, H. F. Yang, Q. Huang, L. B. Duan, J. W. Lynn, and G. H. Rao                                                                                                                                                                |        |
| Tunneling magnetoresistance with positive and negative sign in $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3/\text{SrTiO}_3/\text{Co}$ junctions<br>(5 pages) . . . . .                                                                | 064426 |
| I. J. Vera Marín, F. M. Postma, J. C. Lodder, and R. Jansen                                                                                                                                                                            |        |
| Domain wall entropy of the bimodal two-dimensional Ising spin glass (5 pages) . . . . .                                                                                                                                                | 064427 |
| A. Aromsawa and J. Poulter                                                                                                                                                                                                             |        |
| Magnetism of $\text{La}_{0.625}\text{Sr}_{0.375}\text{MnO}_3$ under high pressure from first principles (9 pages) . . . . .                                                                                                            | 064428 |
| Giuseppe Colizzi, Alessio Filippetti, and Vincenzo Fiorentini                                                                                                                                                                          |        |
| $^7\text{Li}$ NMR studies on the triangular lattice system $\text{LiCrO}_2$ (8 pages) . . . . .                                                                                                                                        | 064429 |
| L. K. Alexander, N. Büttgen, R. Nath, A. V. Mahajan, and A. Loidl                                                                                                                                                                      |        |
| Heisenberg antiferromagnet with anisotropic exchange on the kagomé lattice: Description of the magnetic<br>properties of volborthite (19 pages) . . . . .                                                                              | 064430 |
| T. Yavors'kii, W. Apel, and H.-U. Everts                                                                                                                                                                                               |        |
| Direct observation of the energy gap generating the 1/3 magnetization plateau in the spin-1/2 trimer chain<br>compound $\text{Cu}_3(\text{P}_2\text{O}_6\text{OD})_2$ by inelastic neutron scattering measurements (5 pages) . . . . . | 064431 |
| Masashi Hase, Masaaki Matsuda, Kazuhisa Kakurai, Kiyoshi Ozawa, Hideaki Kitazawa, Naohito Tsujii,<br>Andreas Dönni, Masanori Kohno, and Xiao Hu                                                                                        |        |
| Low-energy spin dynamics in the giant keplerate molecule $\{\text{Mo}_{72}\text{Fe}_{30}\}$ : A muon spin relaxation and $^1\text{H}$ NMR<br>investigation (7 pages) . . . . .                                                         | 064432 |
| J. Lago, E. Micotti, M. Corti, A. Lascialfari, A. Bianchi, S. Carretta, P. Santini, D. Procissi,<br>S. H. Baek, P. Kögerler, C. Baines, and A. Amato                                                                                   |        |
| Exact dimer ground states for a continuous family of quantum spin chains and zigzag ladders (9 pages) . . . . .                                                                                                                        | 064433 |
| Marzieh Asoudeh, Vahid Karimipour, and Afsaneh Sadrolashrafi                                                                                                                                                                           |        |
| Observation of perpendicular exchange bias in $[\text{Pd}/\text{Co}]$ -CoO nanostructures: Dependence on size, cooling<br>field, and training (6 pages) . . . . .                                                                      | 064434 |
| Ildico L. Guhr, Olav Hellwig, Christoph Brombacher, and Manfred Albrecht                                                                                                                                                               |        |
| Weak first-order transition in the three-dimensional site-diluted Ising antiferromagnet in a magnetic field<br>(10 pages) . . . . .                                                                                                    | 064435 |
| A. Maiorano, V. Martín-Mayor, J. J. Ruiz-Lorenzo, and A. Tarancón                                                                                                                                                                      |        |
| <b>Superfluidity and superconductivity</b>                                                                                                                                                                                             |        |
| Preparation and manipulation of a fault-tolerant superconducting qubit (9 pages) . . . . .                                                                                                                                             | 064501 |
| Mateusz Cholasinski, Yuriy Makhlin, and Gerd Schön                                                                                                                                                                                     |        |

|                                                                                                                                                                                                            |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Vortex states in superconductors with strong Pauli-paramagnetic effect (7 pages) . . . . .                                                                                                                 | 064502 |
| Masanori Ichioka and Kazushige Machida                                                                                                                                                                     |        |
| Boson localization and excitations of liquid $^4\text{He}$ confined in gelsil (10 pages) . . . . .                                                                                                         | 064503 |
| Francesco Albergamo, Jacques Bossy, Jonathan V. Pearce, Helmut Schober, and Henry R. Glyde                                                                                                                 |        |
| Muon spin rotation measurements of the superfluid density in fresh and aged superconducting $\text{PuCoGa}_5$ (10 pages) . . . . .                                                                         | 064504 |
| K. Ohishi, R. H. Heffner, G. D. Morris, E. D. Bauer, M. J. Graf, J.-X. Zhu, L. A. Morales, J. L. Sarrao, M. J. Fluss, D. E. MacLaughlin, L. Shu, W. Higemoto, and T. U. Ito                                |        |
| Macroscopic quantum tunneling and quasiparticle-tunneling blockade effect in $s$ -wave/ $d$ -wave hybrid junctions (6 pages) . . . . .                                                                     | 064505 |
| S. Kawabata, A. A. Golubov, Ariando, C. J. M. Verwijs, H. Hilgenkamp, and J. R. Kirtley                                                                                                                    |        |
| Suppression of tunneling of superconducting vortices caused by a remote gate: Example of an extended object tunneling (11 pages) . . . . .                                                                 | 064506 |
| K. Michaeli and A. M. Finkel'stein                                                                                                                                                                         |        |
| Penetration of Andreev bound states into the ferromagnet in a $\text{SrRuO}_3/(\text{110})\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ bilayer: A scanning tunneling spectroscopy study (6 pages) . . . . . | 064507 |
| Itay Asulin, Ofer Yuli, Israel Felner, Gad Koren, and Oded Millo                                                                                                                                           |        |
| Isotope effect in $\text{Li}_x\text{ZrNCl}$ superconductors (4 pages) . . . . .                                                                                                                            | 064508 |
| Y. Taguchi, T. Kawabata, T. Takano, A. Kitora, K. Kato, M. Takata, and Y. Iwasa                                                                                                                            |        |
| Scanning tunneling spectroscopy gap maps of cuprate single crystals: $k$ -space anisotropy as an alternative to nanoscale inhomogeneity (7 pages) . . . . .                                                | 064509 |
| J. R. Cooper                                                                                                                                                                                               |        |
| Electron-phonon interaction in graphite intercalation compounds (14 pages) . . . . .                                                                                                                       | 064510 |
| Lilia Boeri, Giovanni B. Bachelet, Matteo Giantomassi, and Ole K. Andersen                                                                                                                                 |        |
| Quantum melting of a crystal of dipolar bosons (9 pages) . . . . .                                                                                                                                         | 064511 |
| Christophe Mora, Olivier Parcollet, and Xavier Waintal                                                                                                                                                     |        |
| Weak-coupling $d$ -wave BCS superconductivity and unpaired electrons in overdoped $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ single crystals (6 pages) . . . . .                                             | 064512 |
| Yue Wang, Jing Yan, Lei Shan, Hai-Hu Wen, Yoichi Tanabe, Tadashi Adachi, and Yoji Koike                                                                                                                    |        |
| Vortex states and magnetic anisotropy in single-crystal $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ studied by torque magnetometry (7 pages) . . . . .                                                        | 064513 |
| S. Kohout, T. Schneider, J. Roos, H. Keller, T. Sasagawa, and H. Takagi                                                                                                                                    |        |
| Density of states and supercurrent in diffusive SNS junctions: Roles of nonideal interfaces and spin-flip scattering (11 pages) . . . . .                                                                  | 064514 |
| J. C. Hammer, J. C. Cuevas, F. S. Bergeret, and W. Belzig                                                                                                                                                  |        |
| Infrared Hall effect in the electron-doped high- $T_c$ cuprate $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$ (6 pages) . . . . .                                                                                | 064515 |
| A. Zimmers, L. Shi, D. C. Schmadel, W. M. Fisher, R. L. Greene, H. D. Drew, M. Houseknecht, G. Acbas, M.-H. Kim, M.-H. Yang, J. Cerne, J. Lin, and A. Millis                                               |        |
| Andreev edge channels and magnetic focusing in normal-superconductor systems: A semiclassical analysis (7 pages) . . . . .                                                                                 | 064516 |
| P. Rakyta, A. Kormányos, Z. Kaufmann, and J. Cserti                                                                                                                                                        |        |
| Effect of disorder on the pairing properties of electron-doped high- $T_c$ superconductors (6 pages) . . . . .                                                                                             | 064517 |
| Hong-Min Jiang and Jian-Xin Li                                                                                                                                                                             |        |

|                                                                                                                                                                                                               |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Conditions for observing Shapiro steps in a $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ high- $T_c$ superconductor intrinsic Josephson junction: Numerical calculations (15 pages) .....         | 064518 |
| Michihide Kitamura, Akinobu Irie, and Gin-ichiro Oya                                                                                                                                                          |        |
| Momentum and temperature dependence of renormalization effects in the high-temperature superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ (6 pages) .....                                            | 064519 |
| V. B. Zabolotnyy, S. V. Borisenko, A. A. Kordyuk, J. Geck, D. S. Inosov, A. Koitzsch, J. Fink, M. Knupfer, B. Büchner, S.-L. Drechsler, H. Berger, A. Erb, M. Lambacher, L. Patthey, V. Hinkov, and B. Keimer |        |
| Collective excitations of hard-core bosons at half filling on square and triangular lattices (7 pages) .....                                                                                                  | 064520 |
| Tyler Bryant and Rajiv R. P. Singh                                                                                                                                                                            |        |
| Diamagnetism around the Meissner transition in a homogeneous cuprate single crystal (5 pages) .....                                                                                                           | 064521 |
| Jesús Mosqueira, Lucía Cabo, and Félix Vidal                                                                                                                                                                  |        |
| Spin-glass state of individual magnetic vortices in $\text{YBa}_2\text{Cu}_3\text{O}_y$ and $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ below the metal-to-insulator crossover (9 pages) .....                   | 064522 |
| J. E. Sonier, F. D. Callaghan, Yoichi Ando, R. F. Kiefl, J. H. Brewer, C. V. Kaiser, V. Pacradouni, S. A. Sabok-Sayr, X. F. Sun, S. Komiya, W. N. Hardy, D. A. Bonn, and R. Liang                             |        |
| Vortex molecular crystal and vortex plastic crystal states in honeycomb and kagomé pinning arrays (17 pages) .....                                                                                            | 064523 |
| C. Reichhardt and C. J. Olson Reichhardt                                                                                                                                                                      |        |
| Josephson effect in thin-film superconductor/insulator/superconductor junctions with misaligned in-plane magnetic fields (8 pages) .....                                                                      | 064524 |
| J. Linder and A. Sudbø                                                                                                                                                                                        |        |
| Graphite-superconductor junctions as a probe of order-parameter symmetry (6 pages) .....                                                                                                                      | 064525 |
| David Parker and Peter Thalmeier                                                                                                                                                                              |        |
| Unusual critical states in type-II superconductors (14 pages) .....                                                                                                                                           | 064526 |
| E. H. Brandt and G. P. Mikitik                                                                                                                                                                                |        |
| Possible nodeless superconductivity in the noncentrosymmetric superconductor $\text{Mg}_{12-\delta}\text{Ir}_{19}\text{B}_{16}$ (6 pages) .....                                                               | 064527 |
| Gang Mu, Yue Wang, Lei Shan, and Hai-Hu Wen                                                                                                                                                                   |        |
| Two-dimensional Ising model with competing interactions and its application to clusters and arrays of $\pi$ -rings and adiabatic quantum computing (14 pages) .....                                           | 064528 |
| A. O'Hare, F. V. Kusmartsev, K. I. Kugel, and M. S. Laad                                                                                                                                                      |        |
| Microscopic theory of superconductor-constriction-superconductor Josephson junctions in a magnetic field (14 pages) .....                                                                                     | 064529 |
| A. Gumann, T. Dahm, and N. Schopohl                                                                                                                                                                           |        |
| Quantifying structural damage from self-irradiation in a plutonium superconductor (7 pages) .....                                                                                                             | 064530 |
| C. H. Booth, E. D. Bauer, M. Daniel, R. E. Wilson, J. N. Mitchell, L. A. Morales, J. L. Sarrao, and P. G. Allen                                                                                               |        |
| Non-Gaussian dephasing in flux qubits due to $1/f$ noise (5 pages) .....                                                                                                                                      | 064531 |
| Y. M. Galperin, B. L. Altshuler, J. Bergli, D. Shantsev, and V. Vinokur                                                                                                                                       |        |
| Electron doping of cuprates via interfaces with manganites (11 pages) .....                                                                                                                                   | 064532 |
| S. Yunoki, A. Moreo, E. Dagotto, S. Okamoto, S. S. Kancharla, and A. Fujimori                                                                                                                                 |        |

ERRATA

|                                                                                                                                                                                              |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Erratum: Thermodynamic properties of binary hcp solution phases from special quasirandom structures [Phys. Rev. B <b>74</b> , 024204 (2006)] ( <i>1 page</i> ) .....                         | 069901(E) |
| Dongwon Shin, Raymundo Arróyave, Zi-Kui Liu, and Axel Van de Walle                                                                                                                           |           |
| Erratum: Quasiparticle decay rate of Josephson charge qubit oscillations [Phys. Rev. B <b>72</b> , 014517 (2005)] ( <i>1 page</i> ) .....                                                    | 069902(E) |
| Roman Lutchyn, Leonid Glazman, and Anatoly Larkin                                                                                                                                            |           |
| Publisher's Note: Effect of antiferromagnetic exchange interactions on the Glauber dynamics of one-dimensional Ising models [Phys. Rev. B <b>76</b> , 064407 (2007)] ( <i>1 page</i> ) ..... | 069903(E) |
| M. G. Pini and A. Rettori                                                                                                                                                                    |           |
| Erratum: Ideally glassy hydrogen-bonded networks [Phys. Rev. B <b>73</b> , 024210 (2006)] ( <i>1 page</i> ) .....                                                                            | 069904(E) |
| J. C. Phillips                                                                                                                                                                               |           |
| Erratum: Micromagnetism and magnetization reversal of embedded ferromagnetic elements [Phys. Rev. B <b>74</b> , 184405 (2006)] ( <i>1 page</i> ) .....                                       | 069905(E) |
| S. Blomeier, P. Candeloro, B. Hillebrands, B. Reuscher, A. Brodyanski, and M. Kopnarski                                                                                                      |           |
| Publisher's Note: Multimagnon bound states in the frustrated ferromagnetic one-dimensional chain [Phys. Rev. B <b>76</b> , 060407 (2007)] ( <i>1 page</i> ) .....                            | 069906(E) |
| Lars Kecke, Tsutomu Momoi, and Akira Furusaki                                                                                                                                                |           |