

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 75, NUMBER 21

CONTENTS

JUNE 2007-1(I)

EDITORIALS AND ANNOUNCEMENTS

Announcement: New Prices and Payment for Color Figures in the Print Journal (*1 page*) 210001

BRIEF REPORTS

Structure, structural phase transitions, mechanical properties, defects

Field-induced orientational percolation to a ferroelectric phase in relaxor $\text{Pb}(\text{In}_{1/2}\text{Nb}_{1/2})_{1-x}\text{Ti}_x\text{O}_3$
(*4 pages*) 212101

C.-S. Tu, R. R. Chien, C.-M. Hung, V. Hugo Schmidt, F.-T. Wang, and C.-T. Tseng

Determination of the strain dependence of resistance in $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{PMN-PT}$ using the converse
piezoelectric effect (*4 pages*) 212102

R. K. Zheng, Y. Wang, H. L. W. Chan, C. L. Choy, and H. S. Luo

Two relations between elastic constants and optical phonon frequencies in hcp crystals with not too extended
interatomic interactions (*4 pages*) 212103

V. G. Vaks and K. Yu. Khromov

Repulsive force between screw dislocation and coherent twin boundary in aluminum and copper
(*4 pages*) 212104

Zhiming Chen, Zhaohui Jin, and Huajian Gao

Preferential segregation of Pd atoms in the Ag-Pd bimetallic cluster: Density functional theory and molecular
dynamics simulation (*4 pages*) 212105

Hyun You Kim, Hyoung Gyu Kim, Ji Hoon Ryu, and Hyuck Mo Lee

Shifting intrinsic bistability states in a ferroelectric resonant tunneling diode (*4 pages*) 212106

M. K. Li, N. M. Kim, S. J. Lee, J. W. Kim, and T. W. Kang

Inhomogeneous, disordered, and partially ordered systems

Slow dynamics and stress relaxation in a liquid as an elastic medium (*4 pages*) 212201

Kostya Trachenko

Slowdown of self-diffusion induced by partial freezing in confined liquid indium (*4 pages*) 212202

E. V. Charnaya, Cheng Tien, M. K. Lee, and Yu. A. Kumzerov

Dynamics, dynamical systems, lattice effects, quantum solids

Theory of confinement effects in finite one-dimensional phononic crystals (*4 pages*) 212301

Shang Yuan Ren and Yia-Chung Chang



Copyright 2007 by The American Physical Society

(Continued)



1098-0121(20070601)75:21:1-T

Magnetism

Strain state evolution and thickness-dependent properties of epitaxial $\text{Nd}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ films (4 pages)	212401
S. W. Jin, G. Y. Gao, Z. Z. Yin, Z. Huang, X. Y. Zhou, and W. B. Wu	
Absence of commensurate ordering at the polarization flop transition in multiferroic DyMnO_3 (4 pages)	212402
J. Stremper, B. Bohnenbuck, M. Mostovoy, N. Aliouane, D. N. Argyriou, F. Schrettle, J. Hemberger, A. Krimmel, and M. v. Zimmermann	
Spin-charge-lattice coupling near the metal-insulator transition in $\text{Ca}_3\text{Ru}_2\text{O}_7$ (4 pages)	212403
C. S. Nelson, H. Mo, B. Bohnenbuck, J. Stremper, N. Kikugawa, S. I. Ikeda, and Y. Yoshida	
Quantum spin configurations in $\text{Tb}_2\text{Ti}_2\text{O}_7$ (4 pages)	212404
S. H. Curnoe	
Ferromagnetic quantum critical point in URhGe doped with Ru (4 pages)	212405
N. T. Huy, A. Gasparini, J. C. P. Klaasse, A. de Visser, S. Sakarya, and N. H. van Dijk	
First-principles studies of the interlayer exchange coupling in fine-layered Fe/Au multilayers (4 pages)	212406
M. Sternik and K. Parlinski	
Penrose quantum antiferromagnet (4 pages)	212407
A. Jagannathan, A. Szallas, Stefan Wessel, and Michel Duneau	
Electronic structure of the zigzag spin-chain compound In_2VO_5 (4 pages)	212408
U. Schwingenschlög	

Superfluidity and superconductivity

Effect of quantum fluctuations on even-odd energy difference in a Cooper-pair box (4 pages)	212501
R. M. Lutchyn	
Collision of a tracer particle and a quantized vortex in superfluid helium: Self-consistent calculations (4 pages)	212502
Demosthenes Kivotides, Carlo F. Barenghi, and Yuri A. Sergeev	
Oxygen isotope effect on the superconductivity and stripe phase in $\text{La}_{1.6-x}\text{Nd}_{0.4}\text{Sr}_x\text{CuO}_4$ (4 pages)	212503
G. Y. Wang, J. D. Zhang, R. L. Yang, and X. H. Chen	
Dissipation peak as an indicator of inhomogeneity in solid ^4He oscillator experiments (2 pages)	212504
David A. Huse and Zuhair U. Khandker	
Effect of a dc magnetic field on the microwave losses in MgB_2 thin films (4 pages)	212505
A. G. Zaitsev, R. Schneider, R. Hott, Th. Schwarz, and J. Geerk	
Quantum critical behavior in superconducting $\text{Na}_x(\text{H}_3\text{O})_z\text{CoO}_2 \cdot y\text{H}_2\text{O}$ observed in a high-field Co NMR experiment (4 pages)	212506
Y. Ihara, H. Takeya, K. Ishida, C. Michioka, K. Yoshimura, K. Takada, T. Sasaki, H. Sakurai, and E. Takayama-Muromachi	
$4a \times 4a$ electronic charge order enhanced in the inhomogeneous pseudogap state of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ (4 pages)	212507
Y. H. Liu, K. Takeyama, T. Kurosawa, N. Momono, M. Oda, and M. Ido	
Magnetic-flux-driven quantum phase transition in superconducting qubits coupled with a nanomechanical resonator (4 pages)	212508
Gang Chen, Zidong Chen, Junqi Li, and Jiuqing Liang	

Zero modes of two-dimensional chiral p -wave superconductors (4 pages)	212509
V. Gurarie and L. Radzihovsky	

ARTICLES

Structure, structural phase transitions, mechanical properties, defects

Combination method for the calculation of elastic constants (6 pages)	214101
Zhiwei Cui, Yi Sun, Jun Li, and Jianmin Qu	
Coarsening model of cavity nucleation and thin film delamination from single-crystal BaTiO ₃ with proton implantation (6 pages)	214102
Jung-Wuk Hong, Jae-Ho Pyeon, Joseph W. Tedesco, and Young-Bae Park	
Melting curve of tantalum from first principles (9 pages)	214103
S. Taioli, C. Cazorla, M. J. Gillan, and D. Alfè	
Equation of state of cubic boron nitride at high pressures and temperatures (9 pages)	214104
F. Datchi, A. Dewaele, Y. Le Godec, and P. Loubeyre	
Heat capacity and high-resolution Brillouin scattering studies of phase transitions in K ₂ MgWO ₂ (PO ₄) ₂ : Observation of the coupled soft optic and acoustic mode (9 pages)	214105
M. Mączka, J. Hanuza, A. Majchrowski, and S. Kojima	
Unstable polar mode and minimum of the dielectric constant in cubic BaSnO ₃ under hydrostatic pressure (5 pages)	214106
Émile Bévillon and Grégory Geneste	
Femtosecond dynamics of the laser-induced solid-to-liquid phase transition in aluminum (7 pages)	214107
M. Kandyla, T. Shih, and E. Mazur	
<i>Ab initio</i> and classical molecular dynamics of neon melting at high pressure (7 pages)	214108
L. Koči, R. Ahuja, and A. B. Belonoshko	
Structural properties of the multilayer graphene/4H-SiC(0001) system as determined by surface x-ray diffraction (8 pages)	214109
J. Hass, R. Feng, J. E. Millán-Otoya, X. Li, M. Sprinkle, P. N. First, W. A. de Heer, E. H. Conrad, and C. Berger	
Role of the intermediate state in the photoinduced process of Co-Fe cyanide (4 pages)	214110
Y. Moritomo, F. Nakada, H. Kamioka, T. Hozumi, and S. Ohkoshi	
Ferroelectric domain structures around the morphotropic phase boundary of the piezoelectric material PbZr _{1-x} Ti _x O ₃ (11 pages)	214111
Toshihiro Asada and Yasumasa Koyama	
Compressive stress effects on nanoparticle modulus and fracture (10 pages)	214112
W. M. Mook, J. D. Nowak, C. R. Perrey, C. B. Carter, R. Mukherjee, S. L. Girshick, P. H. McMurry, and W. W. Gerberich	
Substitutional NaCl hydration in ice (5 pages)	214113
Peter J. Feibelman	
Inhomogeneous, disordered, and partially ordered systems	
Stability of glassy and ferroelectric states in the relaxors PbMg _{1/3} Nb _{2/3} O ₃ and PbMg _{1/3} Nb _{2/3} O ₃ -12% PbTiO ₃ (6 pages)	214201
Eugene V. Colla, Derek Vigil, John Timmerwilke, M. B. Weissman, D. D. Viehland, and Brahim Dkhil	

Morphology of amorphous $\text{Fe}_{91}\text{Zr}_9/\text{Al}_2\text{O}_3$ multilayers: Dewetting and crystallization (6 pages)	214202
A. Liebig, P. T. Korelis, H. Lidbaum, G. Andersson, K. Leifer, and B. Hjörvarsson	
Nonsaturating magnetoresistance of inhomogeneous conductors: Comparison of experiment and simulation (9 pages)	214203
Jingshi Hu, Meera M. Parish, and T. F. Rosenbaum	
Anomaly in temperature dependence of thermal transport of two hydrogen-bonded glass-forming liquids (6 pages)	214204
A. I. Krivchikov, A. N. Yushchenko, O. A. Korolyuk, F. J. Bermejo, C. Cabrillo, and M. A. González	
Modeling photoelectron currents through gases (5 pages)	214205
A. F. G. Wyatt	

Dynamics, dynamical systems, lattice effects, quantum solids

Phonon dynamics of lanthanum manganite LaMnO_3 using an interatomic shell model potential (7 pages)	214301
E. G. Rini, Mala N. Rao, S. L. Chaplot, N. K. Gaur, and R. K. Singh	
Vibrational spectra and thermal rectification in three-dimensional anharmonic lattices (9 pages)	214302
Jinghua Lan and Baowen Li	
Quantum q -breathers in a finite Bose-Hubbard chain: The case of two interacting bosons (6 pages)	214303
Jean Pierre Nguenang, R. A. Pinto, and Sergej Flach	
Entropy and efficiency in laser cooling of solids (9 pages)	214304
X. L. Ruan, S. C. Rand, and M. Kaviani	
Thermal conductivity of a classical one-dimensional spin-phonon system (16 pages)	214305
A. V. Savin, G. P. Tsironis, and X. Zotos	
Vibrational spectroscopy of polyatomic materials: Semiempirical calculations of anharmonic couplings and infrared and Raman linewidths in naphthalene and PETN crystals (9 pages)	214306
Andrei Piryatinski, Sergei Tretiak, Thomas D. Sewell, and Shawn D. McGrane	
Heat capacity and lattice dynamics of cubic and hexagonal SrMnO_3 : Calorimetry and density functional theory simulations (8 pages)	214307
Rune Søndén, Svein Stølen, P. Ravindran, and Tor Grande	
Dissipative Landau-Zener transitions of a qubit: Bath-specific and universal behavior (14 pages)	214308
Keiji Saito, Martijn Wubs, Sigmund Kohler, Yosuke Kayanuma, and Peter Hänggi	

Magnetism

Green function theory versus quantum Monte Carlo calculations for thin magnetic films (8 pages)	214401
S. Henning, F. Körmann, J. Kienert, W. Nolting, and S. Schwieger	
Exchange bias through a Cu interlayer in an IrMn/Co system (5 pages)	214402
J. Geshev, S. Nicolodi, L. G. Pereira, L. C. C. M. Nagamine, J. E. Schmidt, C. Deranlot, F. Petroff, R. L. Rodríguez-Suárez, and A. Azevedo	
Spin transport in Heisenberg antiferromagnets in two and three dimensions (9 pages)	214403
M. Sentef, M. Kollar, and A. P. Kampf	
Dipole-exchange spin waves in perpendicularly magnetized discs: Role of the Oersted field (10 pages)	214404
R. E. Arias and D. L. Mills	

Systematic low-energy effective field theory for electron-doped antiferromagnets (<i>12 pages</i>)	214405
C. Brügger, C. P. Hofmann, F. Kämpfer, M. Moser, M. Pepe, and U.-J. Wiese	
Anisotropic <i>XY</i> model on the inhomogeneous periodic chain (<i>14 pages</i>)	214406
J. P. de Lima, L. L. Gonçalves, and T. F. A. Alves	
Topological entanglement entropy in the quantum dimer model on the triangular lattice (<i>10 pages</i>)	214407
Shunsuke Furukawa and Grégoire Misguich	
Interplay of spin, orbital, and charge degrees of freedom in half-doped manganites (<i>8 pages</i>)	214408
S. M. Dunaevsky and V. V. Deriglazov	
Phase diagram and spin Hamiltonian of weakly-coupled anisotropic $S=\frac{1}{2}$ chains in $\text{CuCl}_2 \cdot 2((\text{CD}_3)_2\text{SO})$ (<i>11 pages</i>)	214409
Y. Chen, M. B. Stone, M. Kenzelmann, C. D. Batista, D. H. Reich, and C. Broholm	
Co spin fluctuations and long-range ordering in $\text{YBa}_2\text{Cu}_{3-x}\text{Co}_x\text{O}_y$ (<i>11 pages</i>)	214410
F. Maury, I. Mirebeau, V. Viallet, and A. Forget	
MgO/Fe(100) interface: A study of the electronic structure (<i>8 pages</i>)	214411
L. Plucinski, Y. Zhao, B. Sinkovic, and E. Vescovo	
Pinned magnetization in the antiferromagnet and ferromagnet of an exchange bias system (<i>11 pages</i>)	214412
M. R. Fitzsimmons, B. J. Kirby, S. Roy, Zhi-Pan Li, Igor V. Roshchin, S. K. Sinha, and Ivan K. Schuller	
Nonlinear spin waves in cylindrical ferromagnetic nanowires (<i>9 pages</i>)	214413
H. Leblond, V. Veerakumar, and M. Manna	
Two-magnon excitations in resonant inelastic x-ray scattering from quantum Heisenberg antiferromagnets (<i>9 pages</i>)	214414
Tatsuya Nagao and Jun-ichi Igarashi	
Critical exponents and the correlation length in the manganite spin glass $\text{Eu}_{0.5}\text{Ba}_{0.5}\text{MnO}_3$ (<i>6 pages</i>)	214415
Sunil Nair and A. K. Nigam	
Determination of the infrared complex magnetoconductivity tensor in itinerant ferromagnets from Faraday and Kerr measurements (<i>11 pages</i>)	214416
M.-H. Kim, G. Acbas, M.-H. Yang, I. Ohkubo, H. Christen, D. Mandrus, M. A. Scarpulla, O. D. Dubon, Z. Schlesinger, P. Khalifah, and J. Cerne	
Temperature-dependent orbital-moment anisotropy in dilute magnetic oxides (<i>5 pages</i>)	214417
Jun Zhang, Ralph Skomski, Y. F. Lu, and D. J. Sellmyer	
Anisotropy and magnetization reversal with chains of submicron-sized Co hollow spheres (<i>4 pages</i>)	214418
Lin He, Chinpeng Chen, Fang Liang, Ning Wang, and Lin Guo	
Magnetocrystalline anisotropy and magnetization reversal in $\text{Ga}_{1-x}\text{Mn}_x\text{P}$ synthesized by ion implantation and pulsed-laser melting (<i>9 pages</i>)	214419
C. Bihler, M. Kraus, H. Huebl, M. S. Brandt, S. T. B. Goennenwein, M. Opel, M. A. Scarpulla, P. R. Stone, R. Farshchi, and O. D. Dubon	
Functional Keldysh theory of spin torques (<i>13 pages</i>)	214420
R. A. Duine, A. S. Núñez, Jairo Sinova, and A. H. MacDonald	
Energy-level ordering and ground-state quantum numbers for a frustrated two-leg spin-1/2 ladder (<i>14 pages</i>)	214421
Tigran Hakobyan	

Geometrically frustrated magnetic behavior of $\text{Sr}_3\text{NiRhO}_6$ and $\text{Sr}_3\text{NiPtO}_6$ (6 pages)	214422
Niharika Mohapatra, Kartik K. Iyer, Sudhindra Rayaprol, and E. V. Sampathkumaran	
Adiabatic domain wall motion and Landau-Lifshitz damping (6 pages)	214423
M. D. Stiles, W. M. Saslow, M. J. Donahue, and A. Zangwill	
Temperature-dependent Mn-diffusion modes in CoFeB- and CoFe-based magnetic tunnel junctions: Electron-microscopy studies (4 pages)	214424
Y. Wang, Z. M. Zeng, X. F. Han, X. G. Zhang, X. C. Sun, and Z. Zhang	
First-principles theory of chiral dichroism in electron microscopy applied to 3d ferromagnets (9 pages)	214425
Ján Ruzs, Stefano Rubino, and Peter Schattschneider	
Theory of x-ray absorption spectroscopy in solids: Mixing of the core states by the aspherical effective potential (5 pages)	214426
C. Kostoglou, M. Komelj, and M. Fähnle	
Inelastic neutron scattering study of a quantum spin trimer (8 pages)	214427
M. B. Stone, F. Fernandez-Alonso, D. T. Adroja, N. S. Dalal, D. Villagrán, F. A. Cotton, and S. E. Nagler	
Magnetization dynamics in nanocontact current controlled oscillators (6 pages)	214428
G. Consolo, L. Lopez-Diaz, L. Torres, and B. Azzerboni	
High-field moment reorientation in $\text{Er}_2\text{Co}_{17}$ (6 pages)	214429
S. Yoshii, M. Hagiwara, F. R. de Boer, H. Z. Luo, G. H. Wu, F. M. Yang, and K. Kindo	
Nonequivalence of the octahedral sites of cubic Fe_3O_4 magnetite (6 pages)	214430
Mark J. Wenzel and Gerd Steinle-Neumann	
Phase diagram and anisotropic physical properties of single crystal $\text{Bi}_{1-x}\text{Sr}_x\text{MnO}_3$ ($0.35 \leq x \leq 0.64$) (7 pages)	214431
Shigeki Yamada, Takuya Matsunaga, Eri Sugano, Hajime Sagayama, Shota Konno, Shinji Nishiyama, Yosuke Watanabe, and Taka-hisa Arima	
Low-temperature magnetic and transport properties of layered $(\text{Sr}, \text{Ca})_x\text{CoO}_2$ single crystals (6 pages)	214432
Y. Q. Guo, J. L. Luo, D. Wu, Z. Li, N. L. Wang, D. Jin, H. Y. Zhang, and Y. G. Zhao	
Emergence of noncollinear magnetic ordering in small magnetic clusters Mn_n and $\text{As}@\text{Mn}_n$ (10 pages)	214433
Mukul Kabir, D. G. Kanhere, and Abhijit Mookerjee	
Superfluidity and superconductivity	
Evolution of charge carriers for transport in electron-doped cuprate superconductor $\text{La}_{1.89}\text{Ce}_{0.11}\text{CuO}_4$ thin films (5 pages)	214501
K. Jin, B. Y. Zhu, J. Yuan, H. Wu, L. Zhao, B. X. Wu, Y. Han, B. Xu, L. X. Cao, X. G. Qiu, and B. R. Zhao	
Collective Josephson vortex dynamics in a finite number of stacked intrinsic Josephson junctions (8 pages)	214502
Myung-Ho Bae, Jae-Hyun Choi, and Hu-Jong Lee	
Self-organized networks and lattice effects in high-temperature superconductors (23 pages)	214503
J. C. Phillips	
Location of the mean-field critical temperature of underdoped $\text{YBa}_2\text{Cu}_3\text{O}_y$ films (4 pages)	214504
L. Miu, D. Miu, G. Jakob, and H. Adrian	

CONTENTS - Continued

PHYSICAL REVIEW B

THIRD SERIES, VOLUME 75, NUMBER 21

JUNE 2007-1(I)

Critical fields for vortex expulsion from narrow superconducting strips (5 pages)	214505
P. Sánchez-Lotero and J. J. Palacios	
Quantum cavity modes in spatially extended Josephson systems (5 pages)	214506
M. V. Fistul and A. V. Ustinov	
Strong coupling to multiple phonon modes in high-temperature superconductors (4 pages)	214507
Guo-meng Zhao	
Local triplet superconductivity of $\text{La}_{0.65}\text{Ca}_{0.35}\text{MnO}_3$ - X point contacts ($X=\text{Pb}, \text{MgB}_2$) (9 pages)	214508
V. N. Krivoruchko and V. Yu. Tarenkov	
Extended Bose-Hubbard model on a honeycomb lattice (5 pages)	214509
Jing Yu Gan, Yu Chuan Wen, Jinwu Ye, Tao Li, Shi-Jie Yang, and Yue Yu	
Conductance oscillations with magnetic field of a two-dimensional electron gas-superconductor junction (10 pages)	214510
N. M. Chtchelkatchev and I. S. Burmistrov	
Typical versus average helicity modulus in the three-dimensional gauge glass: Understanding the vortex glass phase (7 pages)	214511
Helmut G. Katzgraber, D. Würtz, and G. Blatter	
Theory of vortices in hybridized ballistic/diffusive-band superconductors (18 pages)	214512
K. Tanaka, M. Eschrig, and D. F. Agterberg	
Magnetic oscillations of critical current in intrinsic Josephson-junction stacks (17 pages)	214513
A. E. Koshelev	
Energy and temperature of superfluid turbulent vortex tangles (10 pages)	214514
M. S. Mongiovì, D. Jou, and M. Sciacca	
Antiferromagnetic spin fluctuations in the metallic phase of quasi-two-dimensional organic superconductors (11 pages)	214515
Eddy Yusuf, B. J. Powell, and Ross H. McKenzie	

ERRATA

Publisher's Note: Incommensurate modulations of Bi-III and Sb-II [Phys. Rev. B 75 , 184114 (2007)] (1 page)	219901(E)
M. I. McMahon, O. Degtyareva, R. J. Nelves, S. van Smaalen, and L. Palatinus	
Publisher's Note: Urea-glycerol system: Liquid associated structure studied by dielectric spectroscopy [Phys. Rev. B 75 , 174209 (2007)] (1 page)	219902(E)
Marc-Aurele Brun, Yoshihito Hayashi, Yoichi Katsumoto, Shinji Omori, and Akio Yasuda	
Erratum: Transverse acoustic wave in molecular magnets via electromagnetically induced transparency [Phys. Rev. B 75 , 184423 (2007)] (1 page)	219903(E)
Xiao-Tao Xie, Weibin Li, Jiahua Li, Wen-Xing Yang, Anming Yuan, and Xiaoxue Yang	
Publisher's Note: Femtosecond dynamics of the laser-induced solid-to-liquid phase transition in aluminum [Phys. Rev. B 75 , 214107 (2007)] (1 page)	219904(E)
M. Kandyla, T. Shih, and E. Mazur	
Erratum: Universal transport in two-dimensional granular superconductors [Phys. Rev. B 66 , 052509 (2002)] (1 page)	219905(E)
A. Frydman, O. Naaman, and R. C. Dynes	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW B

THIRD SERIES, VOLUME 75, NUMBER 21

JUNE 2007-1(I)

Erratum: Reversible magnetization of the two-band MgB_2 superconductor: A phenomenological approach [Phys. Rev. B 72 , 134525 (2005)] (<i>1 page</i>)	219906(E)
M. Eisterer, M. Zehetmayer, H. W. Weber, and J. Karpinski	
Erratum: Metamagnetic behavior of Fe_3M ($M=\text{Al}$ and Si) alloys at high pressure [Phys. Rev. B 70 , 094411 (2004)] (<i>1 page</i>)	219907(E)
Joo Yull Rhee and B. N. Harmon	