PHYSICAL REVIEW B

For editorial and subscription correspondence, please see inside front cover
(ISSN: 0163-1829)

PERIODICALS
Postmaster send address changes to:
American Institute of Physics
Suite 1NO1
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 62, NUMBER 13 ***CONTENTS*** **1 OCTOBER 2000-I**

BRIEF REPORTS

Structure, structural phase transitions, mechanical properties, defects, etc.

Composition dependence of the transition temperature in mixed ferroelectric-ferroelectric systems 8561
Carmen Aragó, Manuel I. Marqués, and Julio A. Gonzalo
Second nearest-neighbor modified embedded-atom-method potential 8564
Byeong-Joo Lee and M. I. Baskes
Electromigration of vacancies in copper 8568
J. Hoekstra, A. P. Sutton, T. N. Todorov, and A. P. Horsfield
Relaxation mode in $0.65Pb(Mg_{1/3}Nb_{2/3})O_3$-$0.35PbTiO_3$ relaxor single crystals studied by micro-Brillouin scattering 8572
F. M. Jiang and S. Kojima

Inhomogeneous, disordered, and partially ordered systems

Path-integral approach to strongly nonlinear composites 8576
Marc Barthélémy
Self-trapped exciton dynamics in highly ordered and disordered films of polythiophene derivative 8580
T. Kobayashi, J. Hamazaki, M. Arakawa, H. Kunugita, K. Ema, K. Ochiai, M. Rikukawa, and K. Sanui
Absorption edge in silica glass 8584
K. Saito and A. J. Ikushima

Dynamics, dynamical systems, lattice effects, quantum solids, etc.

Electric field dependence of the thermal conductivity of quantum paraelectrics 8588
W. H. Huber, L. M. Hernandez, and A. M. Goldman

Magnetism

Low-temperature bistability in the magnetic properties of solvent-including lanthanide metallofullerene crystals ... 8592
C. J. Nuttall, Y. Inada, K. Nagai, and Y. Iwasa
Local electronic transport in $La_{0.7}Sr_{0.3}MnO_3$ thin films studied by scanning tunneling potentiometry 8596
B. Grévin, I. Maggio-Aprile, A. Bentzen, L. Ranno, A. Llobet, and Ø. Fischer
Logarithmic corrections to the ground-state energy of finite spin-$\frac{1}{2}$ antiferromagnetic chains due to ferromagnetic end bonds 8600
Jizhong Lou, Jianhui Dai, Shaojin Qin, Zhaobin Su, and Lu Yu
Effects of spin-elastic interactions in frustrated Heisenberg antiferromagnets 8604
Yu. Gaididei and H. Büttner
Spin states of Mn and Co in $LaMn_{0.5}Co_{0.5}O_3$ 8608
P. A. Joy, Y. B. Kholam, and S. K. Date

Copyright 2000 by The American Physical Society

(Continued)

0163-1829(20001001)62:13;1-K

PHYSICAL REVIEW B **THIRD SERIES, VOLUME 62, NUMBER 13** **1 OCTOBER 2000-I**

Spin-density wave and field-induced spin-density wave transitions of $(TMTSF)_2ClO_4$ at high magnetic fields 8611
N. Matsunaga, A. Briggs, A. Ishikawa, K. Nomura, T. Hanajiri, J. Yamada, S. Nakatsuji, and H. Anzai
Magnetic anisotropy and domain structure of the layered manganite $La_{1.36}Sr_{1.64}Mn_2O_7$ 8615
U. Welp, A. Berger, V. K. Vlasko-Vlasov, Qing'An Li, K. E. Gray, and J. F. Mitchell
Specific heat of $CePb_3$ in magnetic fields 8619
R. Pietri and B. Andraka
Raman scattering cross section of spin ladders 8622
E. Orignac and R. Citro
Quantum-classical crossover of the escape rate in the cubic nanospin system with a longitudinal field 8626
Gwang-Hee Kim
Interplay between magnetism, charge localization, and structure in $Sr_{14-x}Ca_xCu_{24}O_{41}$ 8630
U. Ammerahl, B. Büchner, L. Colonescu, R. Gross, and A. Revcolevschi
Magnetic-field-dependent optical studies of a layered antiferromagnet $Pr_{1/2}Sr_{1/2}MnO_3$ 8634
J. H. Jung, H. J. Lee, T. W. Noh, Y. Moritomo, Y. J. Wang, and X. Wei
Transverse spin freezing in ruthenium-doped a-$Fe_{90}Zr_{10}$ 8638
D. H. Ryan, J. M. Cadogan, and J. van Lierop
Magnetic viscosity and coercivity analysis in nanocrystalline $Sm_2Fe_{15}Si_2C$ ribbons 8642
Hong-wei Zhang, Shao-ying Zhang, and Bao-gen Shen
Magnetization reversal dynamics with submicron-scale coercivity variation in ferromagnetic films 8646
Sug-Bong Choe and Sung-Chul Shin
Local modes of thin magnetic films 8650
A. L. Dantas, A. S. Carriço, and R. L. Stamps
Structure and magnetic properties of exchange-biased polycrystalline Fe/MnPd bilayers 8654
Y. J. Tang, B. F. P. Roos, T. Mewes, A. R. Frank, M. Rickart, M. Bauer, S. O. Demokritov, B. Hillebrands, X. Zhou, B. Q. Liang, X. Chen, and W. S. Zhan

Superfluidity and superconductivity

Frustrated Hubbard ladders and superconductivity in κ-BEDT-TTF organic compounds 8658
S. Daul and D. J. Scalapino
Conductivity sum rule, implication for in-plane dynamics, and c-axis response 8661
Wonkee Kim and J. P. Carbotte
Cooper problem in the vicinity of the Anderson transition 8665
J. Lages and D. L. Shepelyansky
Validity of the BCS model Hamiltonian in the limit of small sizes 8669
Vincent H. Crespi and Marvin L. Cohen
Cooper pair dispersion relation for weak to strong coupling 8671
Sadhan K. Adhikari, M. Casas, A. Puente, A. Rigo, M. Fortes, M. A. Solís, M. de Llano, Ariel A. Valladares, and O. Rojo
Strong compensation of the quantum fluctuation corrections in a clean superconductor 8675
D. V. Livanov, G. Savona, and A. A. Varlamov
Experimental critical current patterns in Josephson junction ladders 8679
P. Binder, P. Caputo, M. V. Fistul, A. V. Ustinov, and G. Filatrella
Fiske resonances in annular Josephson junctions 8683
R. Cristiano, M. P. Lisitskii, C. Nappi, and A. Barone
Field-driven pairing-state phase transition in $d_{x^2-y^2}+id_{xy}$-wave superconductors 8687
Bo Lei, S. A. Aruna, and Qiang-Hua Wang
Effect of surface defects on the first field for vortex entry in type-II superconductors 8691
D. Yu. Vodolazov
Upper critical field of Ti and α-TiAl alloys: Evidence of an intrinsic type-II superconductivity in pure Ti 8695
Liu Shumei, Zhang Dianlin, Jing Xiunian, Lu Li, Li Shanlin, Kang Ning, Wu Xiaosong, and J. J. Lin

(Continued)

PHYSICAL REVIEW B THIRD SERIES, VOLUME 62, NUMBER 13 1 OCTOBER 2000-I

Electrodynamics of quasi-two-dimensional BEDT-TTF charge transfer salts 8699
Stephen Hill
Magnetic neutron scattering resonance of high-T_c superconductors in external magnetic fields: An SO(5) study . . . 8703
Niels Asger Mortensen, H. M. Rønnow, Henrik Bruus, and Per Hedegård
Interplay between the vortex phase coherence and extended disorder defects in the vortex-liquid regime of thin films and superlattices of 123 superconductors 8707
E. M. González, J. M. González, and J. L. Vicent
Gap in the infrared response of $HgBa_2Ca_2Cu_3O_{8+\delta}$ 8711
J. J. McGuire, M. Windt, T. Startseva, T. Timusk, D. Colson, and V. Viallet-Guillen
Atomic image of a CuO_2 plane in the STM image of a $Bi_2Sr_2CaCu_2O_{8+\delta}$ cleaved surface 8715
Satoshi Sugita, Takao Watanabe, and Azusa Matsuda

ARTICLES

Structure, structural phase transitions, mechanical properties, defects, etc.

Phase transitions in a two-component site-bond percolation model 8719
H. M. Harreis and W. Bauer
Temperature and pressure effects on the crystal structure of $Sr_3Ru_2O_7$: Evidence for electronically driven structural responses 8725
H. Shaked, J. D. Jorgensen, S. Short, O. Chmaissem, S.-I. Ikeda, and Y. Maeno
High-pressure structural evolution of undoped tetragonal nanocrystalline zirconia 8731
P. Bouvier, E. Djurado, G. Lucazeau, and T. Le Bihan
Interacting topological defects on frozen topographies 8738
Mark J. Bowick, David R. Nelson, and Alex Travesset
Ultrasonic investigation of elastic properties and a phase transition in ferroelectric glycine phosphite $NH_3CH_2COOH_3PO_3$ single crystals 8752
A. Deepthy, H. L. Bhat, A. V. Alex, and J. Philip
Structural study of hexaiodobenzene up to 9.7 GPa 8759
Atsuko Nakayama, Hiroshi Fujihisa, Katsutoshi Aoki, and Raquel Pérez Carlón
Thermoelastic equation of state of molybdenum 8766
Yusheng Zhao, Andrew C. Lawson, Jiangzhong Zhang, Bard I. Bennett, and Robert B. Von Dreele
Field-theory approach to critical behavior of systems with long-range correlated defects 8777
V. V. Prudnikov, P. V. Prudnikov, and A. A. Fedorenko
Pressure-induced decoupling of the order-disorder and displacive contributions to the phase transition in diguanidinium tetrachlorostannate 8787
Marek Szafrański and Kenny Ståhl
$Zr_{0.98}Sn_{0.02}TiO_4$ single crystal in a low electric field: Birefringence, dielectric, and synchrotron x-ray studies 8794
Yung Park
First-principles study of strain-electronic interplay in ZnO: Stress and temperature dependence of the piezoelectric constants 8802
Nicola A. Hill and Umesh Waghmare
Phase transitions and Raman spectra correlations in $La_{2-x}Sr_xCuO_4 (0.0 \leqslant x \leqslant 0.45)$ 8811
D. Lampakis, D. Palles, E. Liarokapis, C. Panagopoulos, J. R. Cooper, H. Ehrenberg, and T. Hartmann
Charge dependence of electron emission in swift heavy-ion collisions with carbon 8818
Michael Beuve, Michel Caron, Benoit Gervais, and Hermann Rothard
High-pressure x-ray-diffraction study of α-$AlPO_4$ 8824
Surinder M. Sharma, Nandini Garg, and S. K. Sikka

(Continued)

PHYSICAL REVIEW B THIRD SERIES, VOLUME 62, NUMBER 13 1 OCTOBER 2000-I

Electronic structure, chemical bonding, and optical properties of paraelectric $BaTiO_3$ 8828
Sonali Saha, T. P. Sinha, and Abhijit Mookerjee

Inhomogeneous, disordered, and partially ordered systems

Supercooled plastic crystals as frustrated elastic domains: Phenomenological theory for cyanoadamantane-family crystals 8835
Tadeusz Luty, Krzysztof Rohleder, Jacques Lefebvre, and Marc Descamps
High-pressure stability of Ti-Zr-Ni quasicrystals 8844
Radu Nicula, Adrian Jianu, Ulrich Ponkratz, and Eberhard Burkel
Vibrational density of states in the archetypical icosahedral quasicrystal i-$Al_{62}Cu_{25.5}Fe_{12.5}$: Neutron time-of-flight results 8849
R. A. Brand, A.-J. Dianoux, and Y. Calvayrac
Searching for sharp features in the pseudogap of icosahedral quasicrystals by NMR 8862
J. Dolinšek, M. Klanjšek, T. Apih, A. Smontara, J. C. Lasjaunias, J. M. Dubois, and S. J. Poon
Thermodynamic considerations about the formation of alloys by mechanical alloying 8871
J. C. de Lima, V. H. F. dos Santos, T. A. Grandi, P. C. T. D'Ajello, and A. Dmitriev
Excess wing in the dielectric loss of glass-forming ethanol: A relaxation process 8878
R. Brand, P. Lunkenheimer, U. Schneider, and A. Loidl

Dynamics, dynamical systems, lattice effects, quantum solids, etc.

Effects of self-induced stress on the steady concentration distribution of hydrogen in fcc metallic membranes during hydrogen diffusion 8884
Wu-Shou Zhang, Xin-Wei Zhang, and Zhong-Liang Zhang
Magnon Raman scattering in solid oxygen under high pressure 8891
Y. Mita, M. Kobayashi, and S. Endo

Magnetism

Ferromagnetism and canted spin phase in $AlAs/Ga_{1-x}Mn_xAs$ single quantum wells: Monte Carlo simulation 8895
M. A. Boselli, A. Ghazali, and I. C. da Cunha Lima
Magnetic excitations and exchange interactions in the spin-$\frac{1}{2}$ two-leg ladder compound $La_6Ca_8Cu_{24}O_{41}$ 8903
M. Matsuda, K. Katsumata, R. S. Eccleston, S. Brehmer, and H.-J. Mikeska
Critical behavior of the $S=1/2$ Heisenberg ferromagnet: A Handscomb quantum Monte Carlo study 8909
Adauto J. F. de Souza, U. M. S. Costa, and M. L. Lyra
Spin-glass behavior in $Li_{1-x}Zn_xV_2O_4$ 8915
W. Trinkl, A. Loidl, M. Klemm, and S. Horn
Magnetic excitations in coupled Haldane spin chains near the quantum critical point 8921
A. Zheludev, T. Masuda, I. Tsukada, Y. Uchiyama, K. Uchinokura, P. Böni, and S.-H. Lee
Probing magnetic anisotropy effects in epitaxial CrO_2 thin films 8931
L. Spinu, H. Srikanth, A. Gupta, X. W. Li, and Gang Xiao
Specific heat and magnetocaloric effect study of multiple field-induced phase transitions in $HoGa_2$ 8935
Y. Aoki, J. Urakawa, H. Sugawara, H. Sato, P. E. Markin, I. G. Bostrem, and N. V. Baranov
Characterization of RCo_2B_2C (R=rare earth, Y): Phase stability, nonsuperconductivity, and breakdown of the de Gennes scaling 8942
M. El Massalami, M. S. da Costa, R. E. Rapp, and F. A. B. Chaves
Antiferromagnetic transitions in the Kondo lattice system $Ce_2Ni_3Ge_5$ 8950
Z. Hossain, S. Hamashima, K. Umeo, T. Takabatake, C. Geibel, and F. Steglich
Changes in the local structure of a $La_{0.70}Ca_{0.30}MnO_3$ CMR sample induced by a magnetic field 8954
D. Cao, F. Bridges, C. H. Booth, and J. J. Neumeier

(Continued)

PHYSICAL REVIEW B THIRD SERIES, VOLUME 62, NUMBER 13 1 OCTOBER 2000-I

Magnetic anomalies in the pseudoternary alloy series $Ce_2Co_{1-x}Au_xSi_3$ 8959
Subham Majumdar and E. V. Sampathkumaran
Evidence for the Ising-Lifshitz crossover in MnP 8965
C. C. Becerra, V. Bindilatti, and N. F. Oliveira, Jr.
Magnetic properties of disordered Ni_3C 8969
Lanping Yue, R. Sabiryanov, E. M. Kirkpatrick, and Diandra L. Leslie-Pelecky
Effect of oxygen nonstoichiometry on electrotransport and low-field magnetotransport property of polycrystalline $La_{0.5}Sr_{0.5}MnO_{3-\delta}$ thin films 8976
J.-M. Liu, Q. Huang, J. Li, C. K. Ong, Z. C. Wu, Z. G. Liu, and Y. W. Du
High-magnetic-field behavior of the triangular-lattice antiferromagnet $CuFeO_2$ 8983
O. A. Petrenko, G. Balakrishnan, M. R. Lees, D. McK. Paul, and A. Hoser
Spin-glass dynamics of $La_{0.95}Sr_{0.05}CoO_3$ 8989
D. N. H. Nam, R. Mathieu, P. Nordblad, N. V. Khiem, and N. X. Phuc
Superparamagnetism in polycrystalline $Li_{0.5}Ni_{0.5}O$ samples: Low-field susceptibility measurements 8996
A. Bajpai and A. Banerjee
Oscillatory exchange coupling across $Cu_{1-x}Ni_x$ spacers: A first-principles calculation of the amplitudes and phases using asymptotic analysis 9005
N. N. Lathiotakis, B. L. Györffy, E. Bruno, and B. Ginatempo
Chemical and magnetic phase diagrams of AB_3 and A_3B anisotropic thin films 9015
H. O. Gonzalez Ochoa, F. Aguilera-Granja, V. Pierron-Bohnes, and M. C. Cadeville
Domain wall resonance linewidth of parallel stripe domains: Effect of the relaxational dynamics of the magnetization modulus 9021
N. Vukadinovic, J. Ben Youssef, H. Le Gall, and J. Ostorero
Self-organized three-band structure of the doped fermionic Ising spin glass 9030
H. Feldmann and R. Oppermann

Superfluidity and superconductivity

Superfluid transition temperature from the Lindemann-like criterion 9041
S. M. Apenko
Particle-hole doping asymmetry in $Pb_2Sr_2YCu_3O_8$-class superconductors 9050
Howard A. Blackstead and John D. Dow
Coupling to spin fluctuations from conductivity scattering rates 9054
E. Schachinger and J. P. Carbotte
Phase diagrams in the SO(5) quantum rotor theory of high-T_c superconductivity 9059
T. A. Zaleski and T. K. Kopeć
Nonlocal effects in magnetization of high-κ superconductors 9077
V. G. Kogan, S. L. Bud'ko, I. R. Fisher, and P. C. Canfield
Mean-field study of the interplay between antiferromagnetism and *d*-wave superconductivity 9083
Bumsoo Kyung
Behavior of a Josephson-junction array with golden mean frustration 9089
Mohammad R. Kolahchi and Hossein Fazli
Linear and nonlinear excitations in two stacks of parallel arrays of long Josephson junctions 9095
G. Carapella, G. Costabile, R. Latempa, G. Filatrella, and J. Mygind
Temperature dependence and mechanisms of vortex pinning by periodic arrays of Ni dots in Nb films 9110
J. I. Martín, M. Vélez, A. Hoffmann, Ivan K. Schuller, and J. L. Vicent
Theory of decoupling in the mixed phase of extremely type-II layered superconductors 9117
J. P. Rodriguez
Thermopower and irreversibility field study of $Bi_{2-x}Pb_xSr_2Ca_2Cu_3O_{10+y}$ 9132
G. V. M. Williams, J. L. Tallon, and D. M. Pooke

(Continued)

PHYSICAL REVIEW B **THIRD SERIES, VOLUME 62, NUMBER 13** **1 OCTOBER 2000-I**

Far-infrared *c*-axis conductivity of flux-grown $Y_{1-x}Pr_xBa_2Cu_3O_7$ single crystals studied by spectral ellipsometry . 9138
C. Bernhard, T. Holden, A. Golnik, C. T. Lin, and M. Cardona
Transport in insulating $YBa_2Cu_3O_{7-\delta}$ 9143
F. P. Milliken, T. Doderer, R. H. Koch, and C. C. Tsuei
Static and dynamic spin correlations in the spin-glass phase of slightly doped $La_{2-x}Sr_xCuO_4$ 9148
M. Matsuda, M. Fujita, K. Yamada, R. J. Birgeneau, M. A. Kastner, H. Hiraka, Y. Endoh, S. Wakimoto, and G. Shirane
Pressure-dependent oxygen diffusion in superconducting $Tl_2Ba_2CuO_{6+\delta}$, $YBa_2Cu_3O_{7-\delta}$, and $HgBa_2CuO_{4+\delta}$:
Measurement and model calculation 9155
Sascha Sadewasser, James S. Schilling, and Allen M. Hermann
Structural and electronic properties of $Hg_{1-y}Mo_yBa_2CuO_{4+\delta}$ 9163
C. Franchini, S. Massidda, A. Continenza, and A. Gauzzi
Microstructure, localized Cu^{2+} spins, and transport properties of $Bi_2Sr_2Ca_{1-x}Y_xCu_2O_{8+\delta}$ 9172
Xu Gaojie, Pu Qirong, Ding Zejun, Yang Li, and Zhang Yuheng
Shape and motion of vortex cores in $Bi_2Sr_2CaCu_2O_{8+\delta}$ 9179
B. W. Hoogenboom, M. Kugler, B. Revaz, I. Maggio-Aprile, Ø. Fischer, and Ch. Renner
Superconductivity in a mesoscopic double square loop: Effect of imperfections 9186
V. M. Fomin, J. T. Devreese, V. Bruyndoncx, and V. V. Moshchalkov
Peak effect in $CeRu_2$: History dependence and supercooling 9191
S. B. Roy, P. Chaddah, and Sujeet Chaudhary

ERRATA

Erratum: Field-induced gap in Cu benzoate and other $S=\frac{1}{2}$ antiferromagnetic chains [Phys. Rev. B **60**, 1038 (1999)] 9200
Ian Affleck and Masaki Oshikawa

Cumulative Author Index 9201