

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
500 Sunnyside Boulevard
Woodbury, NY 11797-2999

THIRD SERIES, VOLUME 58, NUMBER 9

CONTENTS

1 SEPTEMBER 1998-I

BRIEF REPORTS

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

- Dynamic behavior of deuteron glass $\text{Rb}_{0.7}(\text{ND}_4)_{0.3}\text{D}_2\text{AsO}_4$ 5135
Keum Hwan Noh, Sook-Il Kwun, Jong-Gul Yoon, and Wolfgang Kleemann
- Electronic stopping power of protons and He ions in a dilute electron gas of a metal 5139
M. Bergsmann, P. Hörlsberger, F. Kastner, and P. Bauer
- Calculated lattice relaxation in Pu-Ga 5143
J. D. Becker, J. M. Wills, L. Cox, and B. R. Cooper
- Mechanism of Ag^+ ordering in AgI 5146
Chaok Seok and David W. Oxtoby

Inhomogeneous, disordered, and partially ordered systems

- Infrared singularities in $d \leq 2$ disordered interacting systems 5149
Anton Andreev and Alex Kamenev

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

- Dynamical properties of the Landau-Ginzburg model with long-range correlated quenched impurities 5153
Elka Korutcheva and F. Javier de la Rubia
- Quartz-crystal microbalance studies of the velocity dependence of interfacial friction 5157
C. Mak and J. Krim
- Influence of the trajectory-distribution function on the temporal and spectral correlations in disordered media 5160
Kenshi Shimano and Makoto Tomita

Magnetism

- Critical behavior of the two-dimensional fully frustrated XY model 5163
E. H. Boubcheur and H. T. Diep
- Formation of a two-dimensional $c(2 \times 2)$ Mn-Co(001) ferromagnetic surface alloy on Cu(001) 5166
B.-Ch. Choi, P. J. Bode, and J. A. C. Bland
- Thermodynamic properties of the quantum antiferromagnet on the triangular lattice in a magnetic field 5169
N. Suzuki and F. Matsubara
- Magnetic x-ray scattering at relativistic energies 5173
M. Colarieti-Tosti and F. Sacchetti
- Moment clouds in CuMn 5177
T. J. Hicks and J. W. Cable



Boundary spin disorder in nanocrystalline FeRh alloys	5181
A. Hernando, E. Navarro, M. Multigner, A. R. Yavari, D. Fiorani, M. Rosenberg, G. Filoti, and R. Caciuffo	
Doping-induced transition from double exchange to charge order in $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$ near $x=0.50$	5185
M. Roy, J. F. Mitchell, A. P. Ramirez, and P. Schiffer	
Oxygen-isotope effect of the paramagnetic-insulating to ferromagnetic-metallic transition in $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$	5189
J. P. Franck, I. Isaac, Weimin Chen, J. Chrzanowski, and J. C. Irwin	
Soft to hard magnetic anisotropy in nanostructured magnets	5193
J. Arcas, A. Hernando, J. M. Barandiarán, C. Prados, M. Vázquez, P. Marín, and A. Neuweiler	
Noncollinear magnetism in rough ultrathin γ -Fe films	5197
R. Lorenz and J. Hafner	
Evidence for in-plane antiferromagnetic domains in ultrathin NiO films	5201
D. Spanke, V. Solinus, D. Knabben, F. U. Hillebrecht, F. Ciccacci, L. Gregoratti, and M. Marsi	
High-temperature magnetic order in the singlet-ground-state compound PrCu_2	5205
A. Schenck, D. Andreica, F. N. Gygax, M. Pinkpank, Y. Onuki, P. Ahmet, M. Abliz, R. Settai, A. Amato, and N. Kaplan	

Superfluidity and superconductivity

^3He impurity excitation spectrum in liquid ^4He	5209
A. Fabrocini and A. Polls	
Parity effect in a small superconducting particle	5213
S. D. Berger and B. I. Halperin	
Pinned states in Josephson arrays: A general stability theorem	5215
Mauricio Barahona and Steven H. Strogatz	
Oxygen-isotope effect on the high-frequency Raman phonons in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$	5219
A. E. Pantoja, D. M. Pooke, H. J. Trodahl, and J. C. Irwin	
In-plane anisotropy of vortex-lattice melting in large $\text{YBa}_2\text{Cu}_3\text{O}_7$ single crystals	5222
Takekazu Ishida, Kiichi Okuda, Alexandre I. Rykov, Setsuko Tajima, and Ichiro Terasaki	
Phase transitions in the $\text{Tl}_2\text{Ba}_2\text{CuO}_{6+\delta}$ superconductor	5226
D. R. Pederzoli, G. M. Wltschek, J. P. Attfield, and H. Fuess	

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

Theoretical study of structural and electronic properties of VH_x	5230
Per H. Andersson, Lars Fast, Lars Nordström, Börje Johansson, and Olle Eriksson	
Laser-induced-impurity colloid formation and dissociation in MgO single crystals	5236
I. Vergara, R. González, R. Ramírez, J. E. Muñoz Santiuste, and Y. Chen	
Dechanneling by dislocations: A model quantum-mechanical calculation	5243
L. N. S. Prakash Goteti and Anand P. Pathak	
Kinetics of ion-induced transformations in β -NiAl thin films as characterized by <i>in situ</i> electrical resistivity measurements	5250
R. M. N. Miranda, M. A. Z. Vasconcellos, M. N. Baibich, and J. A. T. Borges da Costa	
Preroughening in organic crystals	5258
R. F. P. Grimbergen, H. Meekes, P. Bennema, H. J. F. Knops, and M. den Nijs	
Kinetics of ordering and spinodal decomposition in the pair approximation	5266
Long-Qing Chen	
Effect of mechanical grinding on the hexagonal structure of CdSe	5275
Alessandra Geddo Lehmann, Monica Bionducci, and Franco Buffa	

Formation of metastable ferroelectric clusters in $K_{1-x}Li_xTa_{1-y}Nb_yO_3:Cu,V$ at the paraelectric phase	5282
Gabby Bitton, Meir Razvag, and Aharon J. Agranat	
Evolution towards centrosymmetry of the nonlinear-optical material $RbTiOPO_4$ in the temperature range 293–973 K: Alkaline displacements and titanyl deformations	5287
P. Delarue, C. Lecomte, M. Jannin, G. Marnier, and B. Menaert	
<i>Ab initio</i> study of the martensitic bcc-hcp transformation in iron	5296
Mathias Ekman, Babak Sadigh, Kristin Einarsdotter, and Peter Blaha	
<i>Ab initio</i> calculation on crystal fields of Sm^{2+} in solids with Cl and F ligands	5305
Yongrong Shen and Kevin L. Bray	

Inhomogeneous, disordered, and partially ordered systems

Structure factor and electronic structure of compressed liquid rubidium	5314
Junzo Chihara and Gerhard Kahl	
Vibrational dynamics of defect modes in vitreous silica	5322
Takashi Uchino, Yomei Tokuda, and Toshinobu Yoko	
Solidification and melting of mercury in a porous glass as studied by NMR and acoustic techniques	5329
B. F. Borisov, E. V. Charnaya, P. G. Plotnikov, W.-D. Hoffmann, D. Michel, Yu. A. Kumzerov, C. Tien, and C.-S. Wur	
Dielectric relaxation at the glass transition of confined <i>N</i> -methyl- ϵ -caprolactam	5336
D. Daoukaki, G. Barut, R. Pelster, G. Nimtz, A. Kyritsis, and P. Pissis	
Localization in nonuniform media: Exponential decay of the late-time Ginzburg-Landau impulse response	5346
Eric Smith	
Zero-energy peak of the density of states and localization properties of a one-dimensional Frenkel exciton: Off-diagonal disorder	5367
G. G. Kozlov, V. A. Malyshev, F. Domínguez-Adame, and A. Rodríguez	
Thermodynamic properties of Vycor at low temperatures: Evidence for an enhanced contribution of tunneling systems	5374
A. Nittke, P. Esquinazi, and A. Burin	
Highly anisotropic electronic structure in decagonal quasicrystals and approximants	5378
M. Krajčí and J. Hafner	
Effects of composition and external electric field on positronium formation in a polymer blend system	5384
Y. Kobayashi, C. L. Wang, K. Hirata, W. Zheng, and C. Zhang	
Impedance spectroscopy of brushite composites and a scaling approach to the dispersion behavior of inhomogeneous ionic conductors	5390
L. Tortet, J. R. Gavarrí, J. Musso, G. Nihoul, J. P. Clerc, A. N. Lagarkov, and A. K. Sarychev	

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

Multiphonon Raman and infrared spectra of isotopically controlled diamond	5408
R. Vogelgesang, A. D. Alvarenga, Hyunjung Kim, A. K. Ramdas, S. Rodriguez, M. Grimsditch, and T. R. Anthony	
Picosecond acoustic phonon dynamics in $LaF_3:Pr^{3+}$	5417
Sean M. Kirkpatrick, Ho-Soon Yang, and W. M. Dennis	
Multiple states of intrinsic localized modes	5423
Yuri S. Kivshar, Alan R. Champneys, David Cai, and Alan R. Bishop	
Multiphonon effects in the one-phonon cross section of Al	5429
R. Zivieri, G. Santoro, and V. Bortolani	
Temperature-dependent Raman spectra and anomalous Raman phenomenon of highly oriented pyrolytic graphite	5435
PingHeng Tan, YuanMing Deng, and Qian Zhao	

Phases in antiferroelectric-side $\text{Rb}_{1-x}(\text{ND}_4)_x\text{D}_2\text{AsO}_4$ mixed crystals by light scattering	5440
Chi-Shun Tu, S.-S. Gao, R.-J. Jaw, Z.-Q. Xue, L.-G. Hwa, and V. Hugo Schmidt	
Dynamics of coherent phonons in bismuth generated by ultrashort laser pulses	5448
Muneaki Hase, Kohji Mizoguchi, Hiroshi Harima, Shin-ichi Nakashima, and Kiyomi Sakai	
Resonant steps and spatiotemporal dynamics in the damped dc-driven Frenkel-Kontorova chain	5453
Zhigang Zheng, Bambi Hu, and Gang Hu	
Photon-echo attenuation by dynamical processes in rare-earth-ion-doped crystals	5462
Felix R. Graf, Alois Renn, Gert Zumofen, and Urs P. Wild	
Integral approximation method for calculating ultrasonic beam propagation in anisotropic materials	5479
Brian E. O'Neill and Roman Gr. Maev	
Metastability of $(d+n)$ -dimensional elastic manifolds	5486
D. A. Gorokhov and G. Blatter	
Dynamics of mobile liquid bubbles in helium mixture crystals	5493
T. Markovitz, E. Polturak, and S. G. Lipson	
Magnetism	
Static and dynamic structure factors in the Haldane phase of the bilinear-biquadratic spin-1 chain	5498
Andreas Schmitt, Karl-Heinz Mütter, Michael Karbach, Yongmin Yu, and Gerhard Müller	
Quantum phase transitions and thermodynamic properties in highly anisotropic magnets	5509
V. Yu. Irkhin and A. A. Katanin	
Kondo effect in XXZ spin chains	5529
A. Furusaki and T. Hikihara	
Multiple reorientation transition of the magnetization of free surfaces of Fe on Ag(100)	5539
C. Sommers, J. Zabloudil, C. Uiberacker, P. Weinberger, and L. Szunyogh	
Antiferromagnetic metallic state in the heavily doped region of perovskite manganites	5544
Y. Moritomo, T. Akimoto, A. Nakamura, K. Ohoyama, and M. Ohashi	
Magnetic and specific heat studies of the cation-ordered pyrochlore $\text{NH}_4\text{CoAlF}_6$	5550
N. P. Raju, J. E. Greedan, M. A. Subramanian, C. P. Adams, and T. E. Mason	
Quantum tunneling and phase transitions in spin systems with an applied magnetic field	5554
S.-Y. Lee, H. J. W. Müller-Kirsten, D. K. Park, and F. Zimmerschied	
Magnetization switching of submicrometer Co dots induced by a magnetic force microscope tip	5563
M. Kleiber, F. Kümmerlen, M. Löhdorf, A. Wadas, D. Weiss, and R. Wiesendanger	
Bloch oscillations of magnetic solitons in anisotropic spin- $\frac{1}{2}$ chains	5568
Jordan Kyriakidis and Daniel Loss	
Magnetic hysteresis in an Ising-like dipole-dipole model	5584
György Szabó and György Kádár	
Range dependence of interlayer exchange coupling	5588
Peter M. Levy, Sadamichi Maekawa, and Patrick Bruno	
Crystallographic texture and interface structure in Co/Cu multilayer films	5594
D. E. Joyce, C. A. Faunce, P. J. Grundy, B. D. Fulthorpe, T. P. A. Hase, I. Pape, and B. K. Tanner	
Effect of sputtering pressure on the structure and current-perpendicular-to-the-plane magnetotransport of Co/Ag multilayered films	5602
Wen-C. Chiang, W. P. Pratt, Jr., M. Herrold, and David V. Baxter	
Correlations between ferromagnetic-resonance linewidths and sample quality in the study of metallic ultrathin films	5611
W. Platow, A. N. Anisimov, G. L. Dunifer, M. Farle, and K. Baberschke	
Supershell structure of magnetic susceptibility	5622
S. Frauendorf, V. M. Kolomietz, A. G. Magner, and A. I. Sanzhur	
Dissipation in quasistatically driven disordered systems	5628
Jordi Ortín and Jürgen Goicoechea	

Magnetic transition in Mn_n ($n=2-8$) clusters	5632
M. R. Pederson, F. Reuse, and S. N. Khanna	
Spin holography	5637
Eddy Timmermans, G. T. Trammell, and J. P. Hannon	
Nonequilibrium dynamics of the Anderson impurity model	5649
Matthias H. Hettler, Johann Kroha, and Selman Hershfield	
Crystal-field effects on the thermal conductivity of localized spin metallic compounds	5665
A. Rassili, K. Durczewski, and M. Ausloos	
Specific heat of amorphous rare-earth-transition-metal films	5672
F. Hellman, E. N. Abarra, A. L. Shapiro, and R. B. van Dover	
Quasi-long-range order in random-anisotropy Heisenberg models	5684
Ronald Fisch	
Optical measurement of the isotope shifts and hyperfine and superhyperfine interactions of Nd in the solid state ...	5692
R. M. Macfarlane, R. S. Meltzer, and B. Z. Malkin	
Magnetic moments and Curie temperatures of Ni and Co thin films and coupled trilayers	5701
P. Srivastava, F. Wilhelm, A. Ney, M. Farle, H. Wende, N. Haack, G. Ceballos, and K. Baberschke	
Superfluidity and superconductivity	
Scattering of ^3He atoms from ^4He surfaces	5707
E. Krotscheck and R. Zillich	
π excitation of the t - J model	5719
Eugene Demler, Hiroshi Kohno, and Shou-Cheng Zhang	
Antiferromagnetic hedgehogs with superconducting cores	5731
Paul M. Goldbart and Daniel E. Sheehy	
Nonadiabatic pairing effects for tight-binding electrons interacting with phonons	5736
A. Perali, C. Grimaldi, and L. Pietronero	
Vortex configurations in a Pb/Cu microdot with a 2×2 antidot cluster	5744
T. Puig, E. Rosseel, L. Van Look, M. J. Van Bael, V. V. Moshchalkov, Y. Bruynseraede, and R. Jonckheere	
Theory of tunneling anomalies in superconductors above the paramagnetic limit	5757
Hae-Young Kee, I. L. Aleiner, and B. L. Altshuler	
Dynamics of multiple-junction stacked flux-flow oscillators: Comparison between theory and experiment	5777
Shigeki Sakai, Alexey V. Ustinov, Norbert Thyssen, and Hermann Kohlstedt	
Density of states and the energy gap in Andreev billiards	5783
A. Lodder and Yu. V. Nazarov	
Vortex lattice and matching fields for a long superconducting wire	5789
Pablo A. Venegas and Edson Sardella	
Electric field effects in high- T_c cuprates	5795
P. Konsin and B. Sorkin	
Energy-resolved supercurrent between two superconductors	5803
S.-K. Yip	
$U(1)\times SU(2)$ Chern-Simons gauge theory of underdoped cuprate superconductors	5808
P. A. Marchetti, Zhao-Bin Su, and Lu Yu	
Low-temperature magnetic relaxation in $\text{HgBa}_2\text{Ca}_2\text{Cu}_3\text{O}_{8+\delta}$ single crystals with columnar defects	5825
E. R. Nowak, J. M. Fabijanic, S. Anders, and H. M. Jaeger	
Contrasting Ni- and Zn-substitution effects on magnetic properties and superconductivity in $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$	5831
T. Nakano, N. Momono, T. Nagata, M. Oda, and M. Ido	
Parallel and crossed columnar defects aligned at 45° to the c axis in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_x$ tapes	5839
Y. Kazumata, S. Okayasu, M. Satoka, and H. Kumakura	

Low-temperature behavior of the vortex lattice in unconventional superconductors	5848
M. H. S. Amin, Ian Affleck, and M. Franz	
Superconducting properties in $\text{La}_2\text{CuO}_{4+\delta}$ with excess oxygen	5856
Toshikazu Hirayama, Masahito Nakagawa, Akihiko Sumiyama, and Yasukage Oda	
Method to extract the critical current density and the flux-creep exponent in high- T_c thin films using ac susceptibility measurements	5862
B. J. Jönsson, K. V. Rao, S. H. Yun, and U. O. Karlsson	
Effects of doping on phonon Raman scattering in the Bi-based 2212 system	5868
X. H. Chen, K. Q. Ruan, G. G. Qian, S. Y. Li, L. Z. Cao, J. Zou, and C. Y. Xu	
Errata	
Erratum: Tight-binding computations of elastic anisotropy of Fe, Xe, and Si under compression [Phys. Rev. B 56 , 8575 (1997)]	5873
Ronald E. Cohen, L. Stixrude, and Evgeny Wasserman	
Erratum: Vortex motion in charged and neutral superfluids: A hydrodynamic approach [Phys. Rev. B 57 , 575 (1998)]	5873
E. B. Sonin, V. B. Geshkenbein, A. van Otterlo, and G. Blatter	
Erratum: Superconducting states and depinning transitions of Josephson ladders [Phys. Rev. B 57 , 1181 (1998)] ..	5874
Mauricio Barahona, Steven H. Strogatz, and Terry P. Orlando	
Cumulative Author Index	5875