PHYSICAL REVIEW B

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

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

THIRD SERIES, VOLUME 70, NUMBER 7 ***CONTENTS*** **AUGUST 2004-15(I)**

BRIEF REPORTS

Electronic structure: wide-band, narrow-band, and strongly correlated systems

Spin-resolved second-order correlation energy of the two-dimensional uniform electron gas *(4 pages)* 073101
Michael Seidl

Microwave solid-state left-handed material with a broad bandwidth and an ultralow loss *(3 pages)* 073102
L. Ran, J. Huangfu, H. Chen, Y. Li, X. Zhang, K. Chen, and J. A. Kong

Theoretical study of structural and electronic properties of δ-MoN *(4 pages)* 073103
B. R. Sahu and Leonard Kleinman

X-ray angle-resolved photoemission spectroscopy of CaB_6 *(4 pages)* 073104
S. Souma, T. Takahashi, H. Komatsu, T. Sato, H. Matsui, N. Kimura, H. Aoki, S. Kunii, and J. Akimitsu

Quarter-filled extended Hubbard model with alternating transfer integral: Two-dimensional Ising transition in the ground state *(4 pages)* 073105
Hiromi Otsuka and Masaaki Nakamura

Semiconductors I: bulk

Calculations of electronic structure of $Ge_{44}Mn_2Ba_8$ and $Ge_{42}Mn_4Ba_8$ clathrates *(4 pages)* 073201
Chih-Kai Yang, Jijun Zhao, and Jian Ping Lu

Microscopic description of the phase separation process in $Al_xGa_yIn_{1-x-y}N$ quaternary alloys *(4 pages)* 073202
M. Marques, L. K. Teles, L. M. R. Scolfaro, L. G. Ferreira, and J. R. Leite

Semiconductors II: surfaces, interfaces, microstructures, and related topics

Electron transport in the Aharonov-Bohm pump *(4 pages)* 073301
Dongkwan Shin and Jongbae Hong

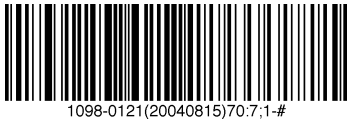
Exciton dephasing in self-assembled CdSe quantum dots *(4 pages)* 073302
Phedon Palinginis, Hailin Wang, Serguei V. Goupalov, D. S. Citrin, M. Dobrowolska, and J. K. Furdyna

Negative magnetoresistance in (In,Mn)As semiconductors *(4 pages)* 073303
S. J. May, A. J. Blattner, and B. W. Wessels

Imaging of the scarred wave functions in chaotic quantum cavities *(4 pages)* 073304
Y. Takagaki and K. H. Ploog



Copyright 2004 by The American Physical Society



(Continued)

PHYSICAL REVIEW B THIRD SERIES, VOLUME 70, NUMBER 7 AUGUST 2004-15(I)

Spin-dependent Rabi oscillations in single quantum dots *(4 pages)* 073305
F. T. Vasko

Scanning-probe-induced defects in thin SiO_2 film on Si: Comparison with Si clusters *(4 pages)* 073306
Noriyuki Miyata and Masakazu Ichikawa

Terahertz electron distribution modulation in piezoelectric $In_xGa_{1-x}N/GaN$ multiple quantum wells using coherent acoustic nanowaves *(4 pages)* 073307
Kung-Hsuan Lin, Gia-Wei Chern, Yue-Kai Huang, and Chi-Kuang Sun

Nonlinear conductance of a quantum microconstriction with single slow two-level system *(4 pages)* 073308
A. Namiranian, Ye. S. Avotina, and Yu. A. Kolesnichenko

Spectroscopic studies of random telegraph noise in small InP quantum dots in $Ga_xIn_{1-x}P$ *(4 pages)* 073309
Nikolay Panev, Mats-Erik Pistol, Jonas Persson, Werner Seifert, and Lars Samuelson

Rumpled relaxation and surface core-level shift in PbS(001) *(3 pages)* 073310
Iskander G. Batyrev, Leonard Kleinman, and Jarkko Leiro

Third-harmonic generation in silicon photonic crystals and microcavities *(4 pages)* 073311
M. G. Martemyanov, E. M. Kim, T. V. Dolgova, A. A. Fedyanin, O. A. Aktsipetrov, and G. Marowsky

Tip size effect on the appearance of a STM image for complex surfaces: Theory versus experiment for Si(111)-(7×7) *(4 pages)* 073312
Y. L. Wang, H.-J. Gao, H. M. Guo, H. W. Liu, I. G. Batyrev, W. E. McMahon, and S. B. Zhang

Phase diagram of a three-electron quantum dot with an impurity *(4 pages)* 073313
Y. M. Liu, G. M. Huang, and C. G. Bao

Surface physics, low-dimensional systems, and related topics

Observation of electronic and atomic shell effects in gold nanowires *(4 pages)* 073401
A. I. Mares, A. F. Otte, L. G. Soukiassian, R. H. M. Smit, and J. M. van Ruitenbeek

Quantum interference effect in the nonlinear conductance of metallic single-wall nanotubes *(4 pages)* 073402
Afshin Namiranian

Spin-orbit coupling in tungsten by spin-polarized two-electron spectroscopy *(4 pages)* 073403
S. Samarin, O. M. Artamonov, A. D. Sergeant, J. Kirschner, A. Morozov, and J. F. Williams

Tunneling density of states of granular metals *(4 pages)* 073404
I. S. Beloborodov, A. V. Lopatin, G. Schwiete, and V. M. Vinokur

Electronic structure of the $Fe_3O_4(111)$ surface *(4 pages)* 073405
Yu. S. Dedkov, M. Fonin, D. V. Vyalikh, J. O. Hauch, S. L. Molodtsov, U. Rüdiger, and G. Güntherodt

ARTICLES

Electronic structure: wide-band, narrow-band, and strongly correlated systems

Theory of Mott insulator–band insulator heterostructures *(12 pages)* 075101
Satoshi Okamoto and Andrew J. Millis

Functional renormalization group for Luttinger liquids with impurities *(16 pages)* 075102
S. Andergassen, T. Enss, V. Meden, W. Metzner, U. Schollwöck, and K. Schönhammer

(Continued)

PHYSICAL REVIEW B **THIRD SERIES, VOLUME 70, NUMBER 7** **AUGUST 2004-15(I)**

Analytical theory of optical transmission through periodically structured metal films via tunnel-coupled surface polariton modes *(9 pages)* 075103
Sergey A. Darmanyan, Michel Nevière, and Anatoly V. Zayats

Emergent photons and transitions in the O(3) sigma model with hedgehog suppression *(13 pages)* 075104
Olexei I. Motrunich and Ashvin Vishwanath

Angle-resolved photoemission study of the rare-earth intermetallic compounds: $R\mathrm{Ni}_2\mathrm{Ge}_2$ ($R=\mathrm{Eu},\mathrm{Gd}$) *(7 pages)* 075105
J. Park, D. P. Brammeier, C. G. Olson, P. C. Canfield, and D. W. Lynch

Fermi surface of a disordered Cu-Al-alloy single crystal studied by high-resolution Compton scattering and electron diffraction *(7 pages)* 075106
J. Kwiatkowska, F. Maniawski, I. Matsumoto, H. Kawata, N. Shiotani, L. Lityńska, S. Kaprzyk, and A. Bansil

Optical characterization of $2k_F$ bond-charge-density wave in quasi-one-dimensional $\frac{3}{4}$-filled $(\mathrm{EDO\text{-}TTF})_2X$ ($X=\mathrm{PF}_6$ and AsF_6) *(8 pages)* 075107
Olga Drozdova, Kyuya Yakushi, Kaoru Yamamoto, Akira Ota, Hideki Yamochi, Gunzi Saito, Hidenori Tashiro, and David B. Tanner

Effect of the inclusion of small metallic components in a two-dimensional dielectric photonic crystal with large full band gap *(12 pages)* 075108
Chien C. Chang, J. Y. Chi, R. L. Chern, C. Chung Chang, C. H. Lin, and C. O. Chang

Geometry and the hidden order of Luttinger liquids: The universality of squeezed space *(21 pages)* 075109
H. V. Kruis, I. P. McCulloch, Z. Nussinov, and J. Zaanen

Correlation exponent K_ρ of the one-dimensional Kondo lattice model *(5 pages)* 075110
J. C. Xavier and E. Miranda

Optical investigation of the origin of switching conduction in charge-density waves *(7 pages)* 075111
Naoki Ogawa and Kenjiro Miyano

Optical spectroscopy of $\mathrm{Yb}_2\mathrm{Ti}_2\mathrm{O}_7$ and $\mathrm{Y}_2\mathrm{Ti}_2\mathrm{O}_7{:}\mathrm{Yb}^{3+}$ and crystal-field parameters in rare-earth titanate pyrochlores *(9 pages)* 075112
B. Z. Malkin, A. R. Zakirov, M. N. Popova, S. A. Klimin, E. P. Chukalina, E. Antic-Fidancev, Ph. Goldner, P. Aschehoug, and G. Dhalenne

Comparison of localization procedures for applications in crystal embedding *(12 pages)* 075113
O. Danyliv and L. Kantorovich

Implications of the B20 crystal structure for the magnetoelectronic structure of MnSi *(8 pages)* 075114
T. Jeong and W. E. Pickett

Technique for the sp^2/sp^3 characterization of carbon materials: *Ab initio* calculation of near-edge structure in electron-energy-loss spectra *(9 pages)* 075115
J. T. Titantah and D. Lamoen

Localization-delocalization transition in one-dimensional electron systems with long-range correlated disorder *(5 pages)* 075116
H. Shima, T. Nomura, and T. Nakayama

Valence of YbS under pressure: A resonant inelastic x-ray emission study *(6 pages)* 075117
E. Annese, J-P. Rueff, G. Vankó, M. Grioni, L. Braicovich, L. Degiorgi, R. Gusmeroli, and C. Dallera

(Continued)

PHYSICAL REVIEW B THIRD SERIES, VOLUME 70, NUMBER 7 AUGUST 2004-15(I)

Semiconductors I: bulk

Photoinduced carrier fission in polymers with a nondegenerate ground state *(9 pages)* 075201
Sheng Li, Liang-Shan Chen, Thomas F. George, and Xin Sun

Ultrafast light-induced charge pair formation dynamics in poly[3-(2′-methoxy-5′ octylphenyl)thiophene] *(10 pages)* 075202
Yuri Zaushitsyn, Vidmantas Gulbinas, Donatas Zigmantas, Fengling Zhang, Olle Inganäs, Villy Sundström, and Arkady Yartsev

Optically active defects in SiO_2: The nonbridging oxygen center and the interstitial OH molecule *(9 pages)* .. 075203
T. Bakos, S. N. Rashkeev, and S. T. Pantelides

Pseudospin Kondo correlations versus hybridized molecular states in double quantum dots *(5 pages)* 075204
A. W. Holleitner, A. Chudnovskiy, D. Pfannkuche, K. Eberl, and R. H. Blick

RKKY interaction in semiconductors: Effects of magnetic field and screening *(14 pages)* 075205
C. H. Ziener, S. Glutsch, and F. Bechstedt

Jahn-Teller effect in the emission and absorption spectra of $ZnS:Cr^{2+}$ and $ZnSe:Cr^{2+}$ *(7 pages)* 075206
G. Bevilacqua, L. Martinelli, E. E. Vogel, and O. Mualin

Carrier-induced ferromagnetism in concentrated and diluted local-moment systems *(8 pages)* 075207
W. Nolting, T. Hickel, A. Ramakanth, G. G. Reddy, and M. Lipowczan

Mott barrier behavior by enhanced donorlike level neutralization in semi-insulating GaAs Schottky diodes *(5 pages)* 075208
Anna Cavallini and Laura Polenta

Cluster model for radiative transition probabilities of d^5 ions in tetrahedral symmetry: Case of Mn^{2+} in the common cation series ZnS, ZnSe, and ZnTe *(12 pages)* 075209
D. Boulanger, R. Parrot, and Z. Cherfi

Ab initio pressure-dependent vibrational and dielectric properties of chalcopyrite $CuAlS_2$ *(5 pages)* 075210
Cihan Parlak and Resul Eryiğit

Semiconductors II: surfaces, interfaces, microstructures, and related topics

Effects of external radiation on biased Aharonov-Bohm rings *(15 pages)* 075301
O. Entin-Wohlman, Y. Imry, and A. Aharony

Dynamic correlations in coupled electron-electron and electron-hole quantum wire systems *(11 pages)* 075302
L. K. Saini, K. Tankeshwar, and R. K. Moudgil

Charge transport in a quantum electromechanical system *(10 pages)* 075303
D. Wahyu Utami, Hsi-Sheng Goan, and G. J. Milburn

Quantum statistical theory of the fermionic quantum Hall effect *(7 pages)* 075304
S. Fujita, K. Ito, Y. Kumek, and Y. Okamura

Monte Carlo method for a quantum measurement process by a single-electron transistor *(7 pages)* 075305
Hsi-Sheng Goan

Linear and nonlinear pulse propagation in a multiple-quantum-well photonic crystal *(10 pages)* 075306
N. C. Nielsen, J. Kuhl, M. Schaarschmidt, J. Förstner, A. Knorr, S. W. Koch, G. Khitrova, H. M. Gibbs, and H. Giessen

Magnetotransport through a quantum wire side coupled to a quantum dot *(5 pages)* 075307
A. A. Aligia and L. A. Salguero

(Continued)

PHYSICAL REVIEW B **THIRD SERIES, VOLUME 70, NUMBER 7** **AUGUST 2004-15(I)**

Voltage-dependent conductance and shot noise in quantum microconstrictions with single defects *(6 pages)* . . 075308
Ye. S. Avotina, A. Namiranian, and Yu. A. Kolesnichenko

Luminescence of coupled quantum wells: Effects of indirect excitons in high in-plane magnetic fields *(5 pages)* 075309
M. Orlita, R. Grill, M. Zvára, G. H. Döhler, S. Malzer, M. Byszewski, and J. Soubusta

Reentrant localization of single-particle transport in disordered Andreev wires *(6 pages)* 075310
N. B. Kopnin, A. S. Mel'nikov, and V. M. Vinokur

Spin-polarized tunneling current between independently contacted quantum wells *(7 pages)* 075311
O. E. Raichev and F. T. Vasko

Determination of band offsets in strained $In_xGa_{1-x}As/GaAs$ quantum wells by capacitance-voltage profiling and Schrödinger-Poisson self-consistent simulation *(8 pages)* 075312
V. I. Zubkov, M. A. Melnik, A. V. Solomonov, E. O. Tsvelev, F. Bugge, M. Weyers, and G. Tränkle

Electron-nuclei spin relaxation through phonon-assisted hyperfine interaction in a quantum dot *(8 pages)* 075313
Veniamin A. Abalmassov and Florian Marquardt

Radiation-induced zero-resistance states: Possible dressed electronic structure effects *(6 pages)* 075314
P. H. Rivera and P. A. Schulz

Quantum current magnification in a multichannel mesoscopic ring *(9 pages)* 075315
Swarnali Bandopadhyay, P. Singha Deo, and A. M. Jayannavar

Electron scattering via interactions with optical phonons in wurtzite crystals *(7 pages)* 075316
Chen Chen, Mitra Dutta, and Michael A. Stroscio

Temperature dependence of the breakdown of the quantum Hall effect studied by induced currents *(8 pages)* 075317
A. J. Matthews, K. V. Kavokin, A. Usher, M. E. Portnoi, M. Zhu, J. D. Gething, M. Elliott, W. G. Herrenden-Harker, K. Phillips, D. A. Ritchie, M. Y. Simmons, C. B. Sorensen, O. P. Hansen, O. A. Mironov, M. Myronov, D. R. Leadley, and M. Henini

NMR study of the electron spin polarization in the fractional quantum Hall effect of a single quantum well: Spectroscopic evidence for domain formation *(10 pages)* 075318
O. Stern, N. Freytag, A. Fay, W. Dietsche, J. H. Smet, K. von Klitzing, D. Schuh, and W. Wegscheider

Surface physics, low-dimensional systems, and related topics

Surface optical phonons in a triaxial ellipsoidal quantum dot *(7 pages)* 075401
O. Reese, L. C. Lew Yan Voon, and M. Willatzen

Calculation of the electric-field enhancement at nanoparticles of arbitrary shape in close proximity to a metallic surface *(16 pages)* 075402
Pavel I. Geshev, Stefan Klein, Tobias Witting, Klaus Dickmann, and Michael Hietschold

Ab initio study of 4 Å armchair carbon nanoropes: Orientation-dependent properties *(10 pages)* 075403
B. K. Agrawal, S. Agrawal, R. Srivastava, and S. Singh

Charge-induced structural changes in $Al_{12}C$ clusters *(5 pages)* 075404
S. F. Li and X. G. Gong

Flexure modes in carbon nanotubes *(11 pages)* 075405
G. D. Mahan and Gun Sang Jeon

(Continued)

PHYSICAL REVIEW B **THIRD SERIES, VOLUME 70, NUMBER 7** **AUGUST 2004-15(I)**

Coherence of persistent currents in multiwall carbon nanotubes *(7 pages)* 075406
M. Szopa, M. Margańska, E. Zipper, and M. Lisowski

Vibrations of closed-shell Lennard-Jones icosahedral and cuboctahedral clusters and their effect on the cluster ground-state energy *(7 pages)* 075407
Antonio Šiber

Interpretation of electron diffraction from carbon nanotube bundles presenting precise helicity *(5 pages)* 075408
J.-F. Colomer, L. Henrard, P. Launois, G. Van Tendeloo, A. A. Lucas, and Ph. Lambin

Acoustic vibrations in free-standing double layer membranes *(4 pages)* 075409
R. S. Bandhu, X. Zhang, R. Sooryakumar, and K. Bussmann

First-principles study of adsorption of methanethiol on Co(0001) *(7 pages)* 075410
L. G. Wang, E. Y. Tsymbal, and S. S. Jaswal

Magnetization of armchair carbon tori *(6 pages)* 075411
C. C. Tsai, F. L. Shyu, C. W. Chiu, C. P. Chang, R. B. Chen, and M. F. Lin

Localization from σ-model geodesics *(11 pages)* 075412
A. Lamacraft, B. D. Simons, and M. R. Zirnbauer

Surface stress driven reorientation of gold nanowires *(9 pages)* 075413
Jiankuai Diao, Ken Gall, and Martin L. Dunn

Magnetic nanostructures stabilized by surface-state electrons *(5 pages)* 075414
V. S. Stepanyuk, L. Niebergall, R. C. Longo, W. Hergert, and P. Bruno

Influence of short-range adatom-adatom interactions on the surface diffusion of Cu on Cu(111) *(14 pages)* . . . 075415
Mihai-Cosmin Marinica, Cyrille Barreteau, Marie-Catherine Desjonquères, and Daniel Spanjaard

Size dependence of the coalescence and melting of iron clusters: A molecular-dynamics study *(6 pages)* 075416
Feng Ding, Arne Rosén, and Kim Bolton

Ab initio study of yttria-stabilized cubic zirconia surfaces *(6 pages)* 075417
G. Ballabio, M. Bernasconi, F. Pietrucci, and S. Serra

Thermal behavior of indium nanoclusters in ion-implanted silica *(8 pages)* 075418
M. A. Tagliente, G. Mattei, L. Tapfer, M. Vittori Antisari, and P. Mazzoldi

ERRATA

Publisher's Note: Donor level of bond-center hydrogen in germanium [Phys. Rev. B **69**, 245207 (2004)] *(1 page)* . . . . . 079901(E)
L. Dobaczewski, K. Bonde Nielsen, N. Zangenberg, B. Bech Nielsen, A. R. Peaker, and V. P. Markevich

Cumulative Author Index i