

Recent publications by IBM authors

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A

On Multivariate E-Splines, W. Dahmen (Freie Universität Berlin, 1000 Berlin 33, Federal Republic of Germany) and C. A. Micchelli (IBM, Yorktown Heights, NY), *Advances in Mathematics* **76**, No. 1, 33-93 (1989).

A Full Sensing Window Random-Access Algorithm for Messages with Strict Delay Constraints, M. Paterakis (University of Virginia, Charlottesville, VA 22901), L. Georgiadis (IBM, Yorktown Heights, NY), and P. Papantoni-Kakakos (University of Virginia, Charlottesville, VA), *Algorithmica* **4**, No. 3, 313-328 (1989).

A Correction Algorithm for Token-Passing Sequences in Mobile Communication Networks, Y. I. Gold and S. Moran (Technion, Israel Institute of Technology, Haifa 32000, Israel), *Algorithmica* **4**, No. 3, 329-341 (1989).

Maximal Selection in Tandem Networks with Symmetric Hearing Range, J. M. Jaffe (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598) and Z. Rosberg (Technion, Israel Institute of Technology, Haifa 32000, Israel), *Algorithmica* **4**, No. 3, 343-364 (1989).

Distributed Deadlock Resolution in Store-and-Forward Networks, J. M. Jaffe (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598) and M. Sidi (Technion, Israel Institute of Technology, Haifa 32000, Israel), *Algorithmica* **4**, No. 3, 417-436 (1989).

Disks, Balls, and Walls: Analysis of a Combinatorial Game, R. Anderson (University of Washington, Seattle, WA 98195), L. Lovász (Eötvös Loránd University, Budapest, Hungary), P. Shor (AT&T Bell Labs, Murray Hill, NJ), J. Spencer (Courant Institute, New York, NY), E. Tardos (Massachusetts Institute of Technology, Cambridge, MA), and S. Winograd (IBM, Yorktown Heights, NY), *American Mathematical Monthly* **96**, No. 6, 481-493 (1989).

Large Area Coatings with Uniform Thickness Fabricated in a Small Vacuum Chamber, C. J. Hayden (University of Rochester, 250 East River Road, Rochester, NY 14623) and E. Spiller (IBM, Yorktown Heights, NY), *Applied Optics* **28**, No. 14, 2694-2696 (1989).

Fabrication and Testing of Large Area Multilayer Coated X-Ray Optics, E. Spiller (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598) and L. Golub (Smithsonian Astrophysical Observatory, Cambridge, MA), *Applied Optics* **28**, No. 14, 2969-2974 (1989).

Quantum-Limited FM-Spectroscopy with a Lead-Salt Diode Laser: A Comparison of Theoretical and Experimental Data, P. Werle, F. Slemr (Fraunhofer-Institute for Atmospheric Environment Research, Kreuzteckbahnstrasse 19, D-8100 Garmisch-Partenkirchen, Federal Republic of Germany), M. Gehrtz (IBM Germany, Plants Mainz, Federal Republic of Germany), and C. Bräuchle (Institute for Physical Chemistry, D-8000 München, Federal Republic of Germany), *Applied Physics B* **49**, No. 2, 99-108 (1989).

Smoothing of Multilayer X-Ray Mirrors by Ion Polishing, E. Spiller (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Applied Physics Letters* **54**, No. 23, 2293-2295 (1989).

Study of Oxygen Addition to Cf_3Br Reactive Ion Etching Plasmas: Effects on Silicon Surface Chemistry and Etching Behavior, T. D. Bestwick, G. S. Oehrlein, D. Angell (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), P. L. Jones, and J. W. Corbett (State University of New York, Albany, NY), *Applied Physics Letters* **54**, No. 23, 2321-2323 (1989).

Carbon as a Barrier for the Outdiffusion of Cu, C. A. Chang, D. S. Yee, and R. Petkie (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Applied Physics Letters* **54**, No. 25, 2545-2547 (1989).

Low Temperature Selective Epitaxial Growth of Silicon at Atmospheric Pressure, T. O. Sedgwick, M. Berkenblit, and T. S. Kuan (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Applied Physics Letters* **54**, No. 26, 2689-2691 (1989).

Silicon Loss and Transient Etch Rate in Selective Reactive Ion Etching of Oxide Overlayers, G. S. Oehrlein (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598) and R. Kalish (Technion, Haifa, Israel), *Applied Physics Letters* **54**, No. 26, 2698-2700 (1989).

Two-Dimensional Hole Gas in Si/Si_{0.85}Ge_{0.15}/Si Modulation Doped Double Heterostructures, P. J. Wang, F. F. Fang, B. S. Meyerson, J. Nocera, and B. Parker (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Applied Physics Letters* **54**, No. 26, 2701-2703 (1989).

Doppler Profile Measurement of Ar and Ar⁺ Translational Energies in a Divergent Magnetic Field Electron Cyclotron Resonance Source, J. S. McKillop, J. C. Forster, and W. M. Holber (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Applied Physics Letters* **55**, No. 1, 30-32 (1989).

Depolarization Field and Ionic Effects on the Bistability of Surface-Stabilized Ferroelectric Liquid-Crystal Devices, K. H. Yang, T. C. Chieu (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), and S. Osofsky (Harvard University, Cambridge, MA), *Applied Physics Letters* **55**, No. 2, 125-127 (1989).

Scanning Capacitance Microscopy on a 25 nm Scale, C. C. Williams, W. P. Hough, and S. A. Rishton (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Applied Physics Letters* **55**, No. 2, 203-205 (1989).

Interferometric Detection of Forward-Scattered Light from Small Particles, J. S. Batchelder and M. A. Taubenblatt (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Applied Physics Letters* **55**, No. 3, 215-217 (1989).

Schottky Diodes on Hydrogen Plasma Treated n-GaAs Surfaces, A. Paccagnella (Università di Trenton, I-38050 Povo, Trenton, Italy), A. Callegari (IBM, Yorktown Heights, NY), E. Latta, and M. Gasser (IBM, Rüschlikon, Switzerland), *Applied Physics Letters* **55**, No. 3, 259-261 (1989).

Magnetic Force Microscopy of Thin Permalloy Films, H. J. Mamin, D. Rugar, J. E. Stern, R. E. Fontana, Jr., and P. Kasiraj (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Applied Physics Letters* **55**, No. 3, 318-320 (1989).

Transient Responses of Quasiparticle Injected Superconducting Links, R. Sprk (Universiteit van Amsterdam, Valckenierstraat 65, 1018 XE Amsterdam, The Netherlands), W. J. Gallagher, S. I. Raider, B. Bumble, and C.-C. Chi (IBM, Yorktown Heights, NY), *Applied Physics Letters* **55**, No. 5, 489-491 (1989).

Nitrogenated Amorphous Carbons: A Potential Source of Diffuse Interstellar Infrared Emission, D. D. Saperstein, S. Metin, and J. H. Kaufman (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Astrophysical Journal* **342**, No. 1, L47 (1989).

Gravitational Instabilities in Shearing, Magnetic Galaxies with a Cloudy Interstellar Gas, B. G. Elmegreen (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Astrophysical Journal* **342**, No. 2, L67-L70 (1989).

On the Relative Frequency of Flocculant and Grand Design Spiral Structures in Barred Galaxies, B. G. Elmegreen and D. M. Elmegreen (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Astrophysical Journal* **342**, No. 2, 677-679 (1989).

B

The Interior of a Whole and Unmodified Biological Object: The Zymogen Granule Viewed with a High-Resolution X-Ray Microscopy, S. S. Rothman, N. Iskander, D. Attwood, Y. Vladimirovsky (Center for X-Ray Optics, Berkeley, CA 94720), K. McQuaid, J. Grendell (University of California, San Francisco, CA), J. Kirz, H. Ade, I. McNulty (State University of New York, Stony Brook, NY), D. Kern, T. H. P. Chang (IBM, Yorktown Heights, NY), and H. Rarback (Brookhaven National Laboratory, Upton, NY), *Biochimica et Biophysica Acta* **991**, No. 3, 484-486 (1989).

On a Theory of Computation and Complexity over the Real Numbers: NP Completeness, Recursive Functions and Universal Machines, L. Blum (International Computer Science Institute, 1947 Centre Street, Berkeley, CA 94704), M. Shub (IBM, Yorktown Heights, NY), and S. Smale (University of California, Berkeley, CA), *Bulletin of the American Mathematical Society* **31**, No. 1, 1-46 (1989).

PC-DOS: Pulling Out the Stops, F. Chen (IBM Corporation, Boca Raton, FL 33432), *BYTE* **14**, No. 6, 294-299 (1989).

C

Symmetry, Selection Rules, and Energy Levels of Pr³⁺Y₃Al₅O₁₂, J. B. Gruber (San Jose State University, San Jose, CA 95192), M. E. Hills (Naval Weapons Center, China Lake, CA), R. M. MacFarlane (IBM, San Jose, CA), C. A. Morrison, and G. A. Turner (U.S. Army Electronics Research, Adelphi, MD), *Chemical Physics* **134**, No. 2/3, 241-257 (1989).

Group Theoretical Statistical Mechanics of Nematogenic and Cholesteric Liquid Crystals, M. W. Evans (University of London, Egham, Surrey TW20 0EW, Surrey, United Kingdom), *Chemical Physics* **135**, No. 2, 187-194 (1989).

Time-Asymmetric Cross Correlation Functions in Liquid Water Induced by Electric Field Combinations: A Computer Simulation, M. W. Evans (University of London, Egham, Surrey TW20 0EW, Surrey, United Kingdom), *Chemical Physics Letters* **158**, No. 5, 375-389 (1989).

A Priori Predictions of the Rotational Constants for HC₁₃N, HC₁₅N, and CO₅₀, D. J. DeFrees (Molecular Research Institute, Palo Alto, CA 94304) and A. D. McLean (IBM, San Jose, CA), *Chemical Physics Letters* **158**, No. 6, 540-544 (1989).

A Generalized Nonsymmetric Lanczos Procedure, J. Cullum, W. Kerner, and R. Willoughby (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Computer Physics Communications* **53**, No. 1/3, 19-48 (1989).

Multilevel Solution Method for the P-Version of Finite Elements, S. Foresti, G. Brussino, S. Hassanzadeh, and V. Sonnad (IBM Corporation, Neighborhood Road, Kingston, NY 12401), *Computer Physics Communications* **53**, Nos. 1/3, 349–355 (1989).

An Algorithm for Discontinuous Inverse Sturm-Liouville Problems with Symmetric Potentials, M. Kobayashi (IBM Corporation, 5-19 Sanban-cho, Chiyoda-ku, Tokyo 102, Japan), *Computers and Mathematics with Applications* **18**, No. 4, 349–356 (1989).

Eigenvalues of Discontinuous Sturm-Liouville Problems with Symmetric Potentials, M. Kobayashi (IBM Corporation, 5-19 Sanban-cho, Chiyoda-ku, Tokyo 102, Japan), *Computers and Mathematics with Applications* **18**, No. 4, 357–364 (1989).

D

Probabilistic Clock Synchronization, F. Christian (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Distributed Computing* **3**, No. 3, 146–158 (1989).

E

Blue Light Generation by Frequency Doubling in Periodically Poled Lithium Niobate Channel Waveguide, E. J. Lim, M. M. Fejer, R. L. Byer (Stanford University, Stanford, CA 94305), and W. J. Kozlovsky (IBM, San Jose, CA) *Electronics Letters* **25**, No. 11, 731–732 (1989).

Scaling of GaAs/AlGaAs Laser Diodes for Submilliampere Threshold Current, E. Marclay, D. J. Arent, C. Harder, H. P. Meier, W. Walter, and D. J. Webb (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Electronics Letters* **25**, No. 14, 892–894 (1989).

Multidimensional Information, G. Sommi (IBM European Center for Scientific and Engineering Computing, Via Giorgione 159, 00147 Rome, Italy), *Elettrotecnica* **76**, No. 3, 231–233 (1989).

Optical Memory, F. Prampolini (IBM European Center for Scientific and Engineering Computing, Via Giorgione 159, 00147 Rome, Italy), *Elettrotecnica* **76**, No. 4, 327–332 (1989).

Intelligent Robots, M. A. Arlotti and V. Dimartino (IBM European Center for Scientific and Engineering Computing, Via Giorgione 159, 00147 Rome, Italy), *Elettrotecnica* **76**, No. 4, 333–339 (1989).

Lattice Gas Dynamics with Enhanced Collisions, F. J. Higuera (School of Aeronautics, Pza. Cardenal Cisneros 3, 8040 Madrid, Spain), S. Succi (IBM European Center for Scientific and Engineering Computing, Rome, Italy), and R. Benzi (Università di Roma, Rome, Italy), *Europhysics Letters* **9**, No. 4, 345–349 (1989).

Correlation of Polar Order in $K_{1-x}Na_xTaO_3$, G. P. Banfi, E. Giolotto, G. Samoggia (University of Pavia, I-27100 Pavia, Italy), and U. T. Höchli (IBM, Rüschlikon, Switzerland), *Europhysics Letters* **9**, No. 7, 729–734 (1989).

F

Ferroelectric α -Chloroester Thiobenzoate Liquid Crystals, R. J. Twieg, K. Betterton, H. T. Nguyen, W. Tang, and W. Hinsberg (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Ferroelectrics* **91**, 243–265 (1989).

Response to "The Computer and the Heat Engine," R. Landauer (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Foundations of Physics* **19**, No. 6, 729–732 (1989).

H

Fractals in Classical Mechanics, M. C. Gutzwiller (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Helvetica Physica Acta* **62**, No. 5, 613–630 (1989).

Entry and Selection Methods for Specifying Dates, J. D. Gould, S. J. Boies, A. Meluson, M. Rasamny, and A. M. Vosburgh (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Human Factors* **31**, No. 2, 199–214 (1989).

I

High-Quality Deposited Gate Oxide MOSFET's and the Importance of Surface Preparation, J. Stasiak, J. Batey, E. Tierney (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), and J. Li (Yale University, New Haven, CT), *IEEE Electron Device Letters* **10**, No. 6, 245–248 (1989).

Spatial Charge Distribution in As-Deposited and UV-Illuminated Gate-Quality Nitrogen-Rich Silicon Nitride, J. Kanicki and D. Jousse (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Electron Device Letters* **10**, No. 6, 277–279 (1989).

Hot-Electron-Induced Instability in 0.5- μ m p-Channel MOSFET's Patterned Using Synchrotron X-Ray Lithography, C. C.-H. Hsu, L. K. Wang, M. R. Wordeman, and T. H. Ning (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Electron Device Letters* **10**, No. 7, 327–329 (1989).

A 3.5-ns/77-K and 6.2-ns/300-K 64K CMOS RAM with ECL Interfaces, T. I. Chappell, S. E. Schuster, B. A. Chappell, J. W. Allan, J. Y.-C. Sun, S. P. Klepner, R. L. Franch, P. F. Greier, and P. J. Restle (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Journal of Solid-State Circuits* **24**, No. 4, 859–868 (1989).

S/370 Sign-Magnitude Floating-Point Adder, S. Vassiliadis, D. S. Lemon, and M. Putrino (IBM Corporation, 1701 North Street, Endicott, NY 13760), *IEEE Journal of Solid-State Circuits* **24**, No. 4, 1062–1070 (1989).

Priority Discarding of Speech in Integrated Packet Networks, D. W. Petr (University of Kansas, Lawrence, KS 66045), L. A. Dasilva, Jr. (IBM, Rio de Janeiro, Brazil), and V. S. Frost (University of Kansas, Lawrence, KS), *IEEE Journal on Selected Areas in Communications* **7**, No. 5, 644–656 (1989).

A Tree-Based Statistical Language Model for Natural Language Speech Recognition, L. R. Bahl, P. F. Brown, P. V. de Souza, and R. L. Mercer (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Transactions on Acoustics, Speech, and Signal Processing* **37**, No. 7, 1001–1008 (1989).

Decoding of Trellis-Encoded Signals in the Presence of Intersymbol Interference and Noise, P. R. Chevillat and E. Eleftheriou (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *IEEE Transactions on Communications* **37**, No. 7, 669–676 (1989).

A Systematic Approach to Carrier Recovery and Detection of Digitally Phase Modulated Signals on Fading Channels, R. Haeb (IBM Corporation, 650 Harry Road, San Jose, CA 95120) and H. Meyr (Aachen University of Technology, Aachen, Federal Republic of Germany), *IEEE Transactions on Communications* 37, No. 7, 748-754 (1989).

Tribological Properties of Edge Card Connector Spring/Tab Interface, E. Y. Hsue and R. G. Bayer (IBM Corporation, 1701 North Street, Endicott, NY 13760), *IEEE Transactions on Components, Hybrids, and Manufacturing Technology* 12, No. 2, 206-214 (1989).

Importance Sampling for Ising Computers Using One Dimensional Cellular Automata, P. D. Hortensius (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), H. C. Card, R. D. McLeod, and W. Pries (University of Manitoba, Winnipeg, Canada), *IEEE Transactions on Computers* 38, No. 6, 769-774 (1989).

An Experimental Study of Memory Fault Latency, R. Chillarege (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598) and R. K. Iyer (University of Illinois, Urbana, IL), *IEEE Transactions on Computers* 38, No. 6, 869-874 (1989).

Minimum Distance: A Method for Partitioning Recurrences for Multiprocessors, J.-K. Peir and R. Cytron (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Transactions on Computers* 38, No. 8, 1203-1211 (1989).

Maximum Likelihood Sequence Estimators: A Geometric View, L. C. Barbosa (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *IEEE Transactions on Information Theory* 35, No. 2, 419-427 (1989).

Image Representation by Sign Information, J. L. C. Sanz and T. T. Huang (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *IEEE Transactions on Pattern Analysis and Machine Intelligence* 11, No. 7, 729-738 (1989).

WADE: An Object-Oriented Environment for Modeling and Simulation of Workcell Applications, A. Levas and R. Jayaraman (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Transactions on Robotics and Automation* 5, No. 3, 324-336 (1989).

A New Technique for Fully Autonomous and Efficient 3D Robotics Hand/Eye Calibration, R. Y. Tsai and R. K. Lenz (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Transactions on Robotics and Automation* 5, No. 3, 345-358 (1989).

Experimental Evaluation of Feedforward and Computed Torque Control, C. H. An (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), C. G. Atkeson, J. D. Griffith, and J. M. Hollerbach (Massachusetts Institute of Technology, Cambridge, MA), *IEEE Transactions on Robotics and Automation* 5, No. 3, 368-373 (1989).

Electrical Measurement of Submicrometer Contact Holes, B. J. Lin, J. A. Underhill, D. L. Sundling, and B. B. Peck (IBM Corporation, P.O. Box A, Essex Junction, VT 05452), *IEEE Transactions on Semiconductor Manufacturing* 2, No. 3, 76-81 (1989).

The Accuracy of the Clock Synchronization Achieved by TEMPO in Berkeley UNIX 4.3 BSD, R. Gusella (University of California, Berkeley, CA 94720) and S. Zatti (IBM, Rüschlikon, Switzerland), *IEEE Transactions on Software Engineering* 15, No. 7, 847-853 (1989).

Multisystem Coupling by a Combination of Data Sharing and Data Partitioning, J. L. Wolf, D. M. Dias, B. R. Iyer, and P. S. Yu (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *IEEE Transactions on Software Engineering* 15, No. 7, 854-860 (1989).

Parallel Graph Algorithms That Are Efficient on Average, D. Coppersmith, P. Raghavan, and M. Tompa (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Information and Computation* 81, No. 3, 318-333 (1989).

Fault-Tolerant Routing in Unique-Path Multistage Interconnection Networks, A. Varma (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Information Processing Letters* 31, No. 4, 197-201 (1989).

On Computing the Closest Boundary on the Convex Hull, A. Aggarwal (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598) and M. Hawrylycz (Massachusetts Institute of Technology, Cambridge, MA), *Information Processing Letters* 31, No. 6, 311-314 (1989).

An Improvement of Goldberg, Plotkin and Vaidya's Maximal Node-Disjoint Paths Algorithm, K. Iwano (IBM Japan Ltd., 5-19 Sanbancho, Chiyodaku, Tokyo, Japan 102), *Information Processing Letters* 32, No. 1, 25-57 (1989).

Experimental Evaluation of Apodization Functions for Quantitative Fourier Transform Mass Spectrometry, J. T. Brenna and W. R. Creasy (IBM Corporation, 1701 North Street, Endicott, NY 13760), *International Journal of Mass Spectrometry and Ion Processes* 90, No. 2, 151-166 (1989).

Enhancement of Contrast in Magnetic Resonance Images by Paramagnetic Agents: Possibilities and Problems, S. H. Koenig (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Israel Journal of Chemistry* 28, No. 4, 345-353 (1989).

NASA and the Space Station (Letter), R. L. Garwin (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Issues in Science and Technology* 5, No. 4, 16-17 (1989).

J

A New Series of Compounds in the T Star Structure: $\text{La}_{2-x}\text{Ln}_x\text{Sr}_2\text{CuO}_{4-y}$, Y. Maeno, F. Lichtenberg, T. Williams, J. Karpinski, and J. G. Bednorz (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Japanese Journal of Applied Physics II* 28, No. 6, L926-L929 (1989).

Density Functional Study of the Electronic Properties of the $\text{Si}(001)2 \times 1$ -Potassium Surface, I. P. Batra (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Journal de Chimie Physique et de Physico-Chimie Biologique* 86, No. 4, 689-702 (1989).

Magnetic and Transport Properties of $\alpha\text{-U}_x\text{Gd}_{1-x}$ Films, P. P. Freitas, T. S. Plaskett, and M. Godinho (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal de Physique* 49, No. NC-8, 1357-1358 (1988).

Imaging of Liquid Crystals with Tunneling Microscopy, J. K. Spong (IBM Corporation, 650 Harry Road, San Jose, CA 95120), L. J. Lacombe, M. M. Dovek (Stanford University, Stanford, CA), J. E. Frommer, and J. S. Foster (IBM, San Jose, CA), *Journal de Physique* **50**, No. 15, 2139-2146 (1989).

Critical Piezoelectricity in Percolation, D. Sornette (CNRS, Nice, France), M. Lagier (Thomson Sintra ASM, Valbonne, France), S. Roux (CNRS, Ura 190, Parc Valrose, F-06034 Nice, France), and A. Hansen (IBM Norway, Bergen, Norway), *Journal de Physique* **50**, No. 16, 2201-2216 (1989).

Adhesion of Polyimide to Annealed 301 Stainless-Steel Films, L. J. Matienzo (IBM Corporation, 1701 North Street, Endicott, NY 13760), *Journal of Adhesion Science and Technology* **3**, No. 5, 357-370 (1989).

Evaluation of Aerosol Deconvolution Algorithms for Determining Submicron Particle Size Distributions with Diffusion Battery and Condensation Nucleus Counter, J. J. Wu, D. W. Cooper, and R. J. Miller (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Aerosol Science* **20**, No. 4, 477-482 (1989).

The Normal Impact of a Rod Mass System on a Viscoelastic Layered Half Space, H. A. Downey (IBM Corporation, Charlotte, NC 28257) and D. B. Bogy (University of California, Berkeley, CA), *Journal of Applied Mechanics* **55**, No. 4, 879-886 (1989).

Deep Level Transient Spectroscopy of Metal-Oxide-Semiconductor Capacitors Fabricated on Cf_x Reactive-Ion-Etched Si, D. Vuillaume, H. Lakhdari (Institut Supérieur Electronique du Nord, 41, Boulevard Vauban, 590456 Lille Cedex, France), and J. P. Gambino (IBM, Hopewell Junction, NY), *Journal of Applied Physics* **66**, No. 1, 230-235 (1989).

Electrical Characteristics of W-Si(100) Schottky Barrier Junctions, M. O. Aboelfotoh (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Applied Physics* **66**, No. 1, 262-272 (1989).

Investigations of Resonance Tunneling in III-V Heterostructures, P. Guéret, C. Rossel, E. Marclay, and H. Meier (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Journal of Applied Physics* **66**, No. 1, 278-285 (1989).

The Electric Field Dependence of the Mobility in Molecularly Doped Polymers, L. B. Schein, A. Peled, and D. Glatz (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Journal of Applied Physics* **66**, No. 2, 686-692 (1989).

The Role of Gas Adsorption in Ion-Beam-Induced Deposition of Gold, A. D. Dubner (Massachusetts Institute of Technology, Cambridge, MA 02139) and A. Wagner (IBM, Yorktown Heights, NY), *Journal of Applied Physics* **66**, No. 2, 870-874 (1989).

High-Temperature Interaction Studies of C/Cu/SiO₂/Si and Related Structures, C.-A. Chang (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Applied Physics* **66**, No. 3, 1163-1169 (1989).

Liquid Junctions for Characterization of Electronic Materials. II. Photoreflectance and Electroreflectance of n-Si, W.-M. Shen, M. C. A. Fantini, M. Tomkiewicz (Brooklyn College, Brooklyn, NY

11210), and J. P. Gambino (IBM, Hopewell Junction, NY), *Journal of Applied Physics* **66**, No. 4, 1759-1764 (1989).

Liquid Junctions for Characterization of Electronic Materials. III. Modulation Spectroscopies of Reactive Ion Etching of Si, W.-M. Shen, M. C. A. Fantini, F. H. Pollack, M. Tomkiewicz (Brooklyn College, Brooklyn, NY 11210), H. J. Leary, and J. P. Gambino (IBM, Hopewell Junction, NY), *Journal of Applied Physics* **66**, No. 4, 1765-1771 (1989).

Measurements of Carbon Thin Films Using X-Ray Reflectivity, M. F. Toney (IBM Corporation, 650 Harry Road, San Jose, CA 95120) and S. Brennan (Stanford Synchrotron Radiation Laboratory, Stanford, CA), *Journal of Applied Physics* **66**, No. 4, 1861-1863 (1989).

Rapid Thermal Annealing of YBaCuO Thin Films Deposited on SiO₂ Substrates, Q. Y. Ma, E. S. Yang (Columbia University, 1312 Mudd Building, New York, NY 10027), and C.-A. Chang (IBM, Yorktown Heights, NY), *Journal of Applied Physics* **66**, 1866-1868 (1989).

Analytical Description of Minimum Energy Expenditure Surfaces, D. J. Winarski (IBM Corporation, Tucson, AZ 85744) and J. R. Pearson (University of Michigan, Ann Arbor, MI), *Journal of Biomechanical Engineering* **110**, No. 4, 386-391 (1988).

Theoretical Studies of the Complexes of Benzene and Pyrene with Water and of Benzene with Formic Acid, Ammonia, and Methane, J. L. Brédas (Université de Mons, Maistriau, 21 B-7000 Mons, Belgium) and G. B. Street (IBM, San Jose, CA), *Journal of Chemical Physics* **90**, No. 12, 7291-7299 (1989).

Ground State Properties of Cesium Dimers from *Ab Initio* Pseudopotential Approaches, I. Moullet (Ecole Polytechnique Fédérale de Lausanne, CH-1015 Lausanne, Switzerland), W. Andreoni (IBM, Rüschlikon, Switzerland), and P. Giannozzi (Ecole Polytechnique Fédérale de Lausanne, CH-1015 Lausanne, Switzerland), *Journal of Chemical Physics* **90**, No. 12, 7306-7312 (1989).

Molecular Dynamics and Rayleigh-Bénard Convection, J. A. Given and E. Clementi (IBM Corporation, Neighborhood Road, Kingston, NY 12401), *Journal of Chemical Physics* **90**, No. 12, 7376-7383 (1989).

Atomic Force Microscopy of Polymeric Liquid Films, C. M. Mate, M. R. Lorenz, and V. J. Novotny (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Journal of Chemical Physics* **90**, No. 12, 7550-7555 (1989).

Comment on Linewidths and Shifts in the Stokes-Raman Q Branch of D₂ in He, S. Green (NASA, New York, NY 10025), R. Blackmore (IBM Corporation, Bethesda, MD), and L. Monchick (Johns Hopkins University, Laurel, MD), *Journal of Chemical Physics* **91**, No. 1, 52-55 (1989).

On the Anomalous High and Negative Values of the Compact Layer Capacity in Some New Models of the Metal Electrolyte Interface, W. Schmickler (Universität Bonn, Wegelerstrasse 12, 53000 Bonn 1, Federal Republic of Germany) and D. Henderson (IBM, San Jose, CA), *Journal of Electroanalytical Chemistry and Interfacial Electrochemistry* **265**, No. 1, 11-14 (1989).

Construction Techniques for Factory Floor Expert Systems, J. D. Kershner and R. D. Lorenz (IBM Corporation, 1000 Westchester Avenue, Harrison, NY 10604), *Journal of Engineering for Industry* **110**, No. 4, 395-397 (1988).

Integration of Numerical Simulation and Flow Visualization in the Design of Equipment for the Manufacture of Submicron Semiconductor Devices, F. W. Kern (IBM Corporation, P.O. Box A, Essex Junction, VT 05452), *Journal of Environmental Science* **32**, No. 3, 19-24 (1989).

Towards Federal Standard 209E: Partial Versus Complete Inspection of Clean Air Zones, D. W. Cooper (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Environmental Science* **32**, No. 3, 31-33 (1989).

Thin-Film Reactions of Al with Co, Cr, Mo, Ta, Ti, and W, E. G. Colgan (IBM Corporation, Route 52, Hopewell Junction, NY 12533) and J. W. Mayer (Cornell University, Ithaca, NY), *Journal of Materials Research* **4**, No. 4, 815-820 (1989).

Differential Scanning Tunnelling Microscopy, D. W. Abraham, C. C. Williams, and H. K. Wickramasinghe (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Microscopy* **152**, Part 3, 599-603 (1989).

An STM for Biological Applications Bioscope, B. Michel and G. Travaglini (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Journal of Microscopy* **152**, Part 3, 681-685 (1989).

A Real Space Investigation of the Dimer Defect Structure of Si(001)-(2 × 8), H. Niehus (Institut für Grenzflächenforschung und Vakuumphysik, KF Jülich, D-5710 Jülich, Federal Republic of Germany), U. K. Köhler, M. Copel, and J. E. Demuth (IBM, Yorktown Heights, NY), *Journal of Microscopy* **152**, Part 3, 735-742 (1989).

Voltage-Dependent Imaging of Antimony on the GaAs(110) Surface, P. Martensson and R. M. Feenstra (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Microscopy* **152**, Part 3, 761-769 (1989).

Fine Structure in Field Emission Resonances at Surfaces, J. H. Coombs and J. K. Gimzewski (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Journal of Microscopy* **152**, Part 3, 841-851 (1989).

Scanning Near-Field Optical Microscopy (SNOM), D. W. Pohl, U. Ch. Fischer, and U. T. Dürig (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Journal of Microscopy* **152**, Part 3, 853-861 (1989).

High-Resolution Force Microscopy of In-plane Magnetization, D. W. Abraham, C. C. Williams, and H. K. Wickramasinghe (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Microscopy* **152**, Part 3, 863-869 (1989).

On the Mean-Square of the Riemann Zeta-Function on the Critical Line, J. L. Hafner (IBM Corporation, 5600 Cottle Road, San Jose, CA 95193) and A. Ivić (Univeristeta u Beogradu, Yugoslavia), *Journal of Number Theory* **32**, No. 2, 151-191 (1989).

Coordination Number of Disordered Packings of Identical Spheres, A. Gervois (CENS, F-91191 Gif-Sur-Yvette, France), M. Lichtenberg (IBM, Paris, France), L. Oger, and E. Guyon (CNRS, Paris, France), *Journal of Physics A* **22**, No. 12, 2119-2131 (1989).

Coherent Electron Beams and Sources, N. Garcia (Universidad Autónoma de Madrid, Cantoblanco, 28049-Madrid, Spain) and H. Rohrer (IBM, Rüschlikon, Switzerland), *Journal of Physics Condensed Matter* **1**, No. 23, 3737-3742 (1989).

Etching of Silicon and Silicon Dioxide by Halofluorocarbon Plasmas, E. Occhiello, F. Garbassi (Istituto Guido Donegani SpA, via Fauser 4, I-28100 Novara, Italy), and J. W. Coburn (IBM, San Jose, CA), *Journal of Physics D* **22**, No. 7, 983-988 (1989).

Thermal Deesterification and Decarboxylation of Alternating Copolymers of Styrene with β -Substituted t-Butyl α -Cyanoacrylates, H. Ito (IBM Corporation, 650 Harry Road, San Jose, CA 95120), A. B. Padias, and H. K. Hall (University of Arizona, Tucson, AZ), *Journal of Polymer Science, Polymer Chemistry* **27**, No. 9, 2871-2881 (1989).

Synthesis and Characterization of Phenolic Hydroxyl Terminated Phenylquinoxaline Oligomers, J. W. Labadie and J. L. Hedrick (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Journal of Polymer Science, Polymer Chemistry* **27**, No. 9, 2951-2962 (1989).

Improved Polyimide/Polyimide Adhesion Via Swelling Agent Enhanced Interdiffusion, K. L. Saenger, H. M. Tong (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), and R. D. Haynes (Remtech Incorporated, Huntsville, AL), *Journal of Polymer Science, Polymer Letters* **27**, No. 7, 235-237 (1989).

Cation Interactions with Polyamic Acids, H. G. Linde and R. T. Gleason (IBM Corporation, P.O. Box A, Essex Junction, VT 05452), *Journal of Polymer Science, Polymer Physics* **27**, No. 7, Part B, 1485-1497 (1989).

Phase Transitions in Lattice Solutions of Semiflexible Chains of Finite Length, G. Ronca (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Journal of Polymer Science, Polymer Physics* **27**, No. 9, Part B, 1795-1806 (1989).

Bifurcations of a Lattice Gas Flow Under External Forcing, R. Benzi (Rome University, Tor Vergata, I-00173 Rome, Italy) and S. Succi (IBM European Center for Scientific and Engineering Computing, Rome, Italy), *Journal of Statistical Physics* **56**, No. 1-2, 69-81 (1989).

Stratification and Knowledge Base Management, C. Lassez (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), K. McAloon (City University of New York, Graduate Center, New York, NY), and G. Port (University of Melbourne, Parkville, Victoria, Australia), *Journal of Symbolic Logic* **7**, No. 5, 509-522 (1989).

Laminated Piezopolymer Plates for Torsion and Bending Sensors and Actuators, C. K. Lee (IBM Corporation, 650 Harry Road, San Jose, CA 95120) and F. C. Moon (Cornell University, Ithaca, NY), *Journal of the Acoustical Society of America* **85**, No. 6, 2432-2439 (1989).

Application of an Auditory Model to Speech Recognition, J. R. Cohen (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of the Acoustical Society of America* **85**, No. 6, 2623-2629 (1989).

Ab Initio Studies of the C₃H₄ Surface III. Thermal Isomerization, M. Yoshimine, J. Pacansky, and N. Honjou (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Journal of the American Chemical Society* **111**, No. 12, 4198-4209 (1989).

Hyperconjugative Distortions and the Cyclopentylcation Structure, P. V. Schleyer, J. W. D. Carneiro (University of Erlangen Nurnberg, D-8520 Erlangen, Federal Republic of Germany), W. Koch (IBM Deutschland, Heidelberg), and K. Raghavachari (AT&T Bell Laboratories, Murray Hill, NJ), *Journal of the American Chemical Society* **111**, No. 14, 5475-5477 (1989).

Application of Chemical and Electrochemical Micromachining in the Electronics Industry, M. Datta and L. T. Romankiw (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of the Electrochemical Society* **136**, No. 6, C285-C292 (1989).

Vapor Phase Deposition of Palladium for Electroless Copper Plating, R. R. Thomas and J. M. Park (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of the Electrochemical Society* **136**, No. 6, 1661-1666 (1989).

MnFe and NiFe Films and Magnetic Exchange Bilayers, M. A. Russak, S. M. Rossnagel, S. L. Cohen, T. R. McGuire, G. J. Scilla, C. V. Jahnes, J. M. Baker, J. J. Cuomo (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), and C. Hwang (IBM, San Jose, CA), *Journal of the Electrochemical Society* **136**, No. 6, 1793-1798 (1989).

Low-Temperature Specific Heat of Bi₂Sr₂CaCu₂O₈: Comparison with Some Other Layered Oxides, J. M. D. Coey (University of Dublin, Dublin 2, Ireland), S. Von Molnar, and A. Torressen (IBM, Yorktown Heights, NY), *Journal of the Less Common Metals* **151**, No. 1-2, 191-194 (1989).

Nature of the Granular Structure in Low-Temperature-Helium Irradiated YBaCuO Thin Films, P. Nédellec, J. Leseuer, A. Traverse, H. Bernas, L. Cumoulin (C.S.N.S.M., Batiment 108, 91405 Orsay, France), and R. B. Laibowitz (IBM, Yorktown Heights, NY), *Journal of the Less Common Metals* **151**, No. 1-2, 443-449 (1989).

Thermal Decomposition of Palladium Imidazole Complexes, A. D. Katnani, K. I. Papathomas (IBM Corporation, 1701 North Street, Endicott, NY 13760), D. P. Drolet, and A. J. Lees (State University of New York, Binghamton, NY), *Journal of Thermal Analysis* **35**, No. 1, 147-152 (1989).

Oxidation Stability of Lubricants for Dry Circuit Sliding Contacts, K. I. Papathomas and A. D. Katnani (IBM Corporation, 1701 North Street, Endicott, NY 13760), *Journal of Thermal Analysis* **35**, No. 1, 153-161 (1989).

In-Situ Laser Diagnostic Studies of Plasma-Generated Particulate Contamination, G. S. Selwyn (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), J. Singh, and R. S. Bennett (IBM, Hopewell Junction, NY), *Journal of Vacuum Science and Technology A* **7**, No. 4, 2758-2765 (1989).

Determination of the Local Electronic Structure of Atomic-Sized Defects on Si(001) by Tunneling Spectroscopy, R. J. Hamers and U. K. Köhler (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Vacuum Science and Technology A* **7**, No. 4, 2854-2859 (1989).

Scanning Tunneling Microscopy Study of Low-Temperature Epitaxial Growth of Silicon on Si(111)-(7 × 7), U. Köhler (Universität Hannover, 3000 Hannover 1, Federal Republic of Germany), J. E. Demuth, and R. J. Hamers (IBM, Yorktown Heights, NY), *Journal of Vacuum Science and Technology A* **7**, No. 4, 2860-2867 (1989).

Structure of Cs on GaAs(110) as Determined by Scanning Tunneling Microscopy, P. N. First, R. A. Dragoset, A. Strosio, R. J. Celotta (National Institute of Standards and Technology, Gaithersburg, MD 20899), and R. M. Feenstra (IBM, Yorktown Heights, NY), *Journal of Vacuum Science and Technology A* **7**, No. 4, 2868-2872 (1989).

The Determination of Structure in Small Supported Metal Particles by Scanning Transmission Electron Diffraction, H. Poppa (IBM Corporation, 650 Harry Road, San Jose, CA 95120), R. D. Moorhead (NASA Ames Research Center, Moffett Field, CA), and M. Avalos-Borja (Stanford University, Stanford, CA), *Journal of Vacuum Science and Technology A* **7**, No. 4, 2882-2889 (1989).

Magnetron Ion Etching with CF₄ Based Plasmas: Effects of Magnetic Field on Plasma Chemistry, A. A. Bright and S. Kaushik (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Journal of Vacuum Science and Technology B* **7**, No. 3, 542-546 (1989).

L

Influence of Electric Field at the Electrode/Electrolyte Interface on EXAFS Results, M. G. Samant (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Langmuir* **5**, No. 4, 1113-1115 (1989).

M

Surface Interaction in Solvent-Cast Polystyrene/Poly(methyl methacrylate) Diblock Copolymers, P. F. Green (Sandia National Laboratories, Albuquerque, NM 87185), T. M. Christensen, T. P. Russell (IBM, San Jose, CA), and R. Jerome (University of Liège, Liège, Belgium), *Macromolecules* **22**, No. 5, 2189-2194 (1989).

Structural Studies of Conducting Polymer Solutions and Films Poly(3-Methylthiophene), D. P. Murray, L. D. Kispert, S. Petrovic (University of Alabama, Tuscaloosa, AL 35487), and J. E. Frommer (IBM, San Jose, CA), *Macromolecules* **22**, No. 5, 2244-2252 (1989).

Synthesis and Characterization of a Model Saturated Hydrocarbon Diblock Copolymer, F. S. Bates, J. H. Rosedale, H. E. Bair (AT&T Bell Laboratories, Murray Hill, NJ 07974), and T. P. Russell (IBM, San Jose, CA), *Macromolecules* **22**, No. 6, 2557-2564 (1989).

Surface-Induced Orientation of Symmetric, Diblock Copolymers: A Secondary Ion Mass Spectrometry Study, G. Coulon (U.S.T. Lille Flandres-Artois, 59655-Villeneuve d'Ascq Cedex, France), T. P. Russell, V. R. Deline (IBM, San Jose, CA), and P. F. Green (Sandia National Laboratory, Albuquerque, NM), *Macromolecules* **22**, No. 6, 2581-2589 (1989).

Electron Spin Resonance Study of Radicals in Photopolymerized Di(meth) Acrylate Network, M. E. Best and P. H. Kasai (IBM Corporation, 650 Harry Road, San Jose, CA 95120, *Macromolecules* **22**, No. 6, 2622-2627 (1989).

Effect of a Diblock Copolymer on the Adhesion Between Incompatible Polymers, H. R. Brown (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Macromolecules* **22**, No. 6, 2859-2860 (1989).

Raman Spectroscopic Characterization and Molecular Force Field Development of a Synthetic Polyamide: Nylon 66, C. G. Zimba, J. F. Rabolt (IBM Corporation, 650 Harry Road, San Jose, CA 95120), and A. D. English (E. I. du Pont de Nemours and Company, Wilmington, DE), *Macromolecules* **22**, No. 6, 2863-2867 (1989).

Relaxometry of Lens Homogenates. II. Temperature Dependence and Comparison with Other Proteins, C. F. Beaulieu (University of Washington, Seattle, WA 98195), R. D. Brown (IBM, Yorktown Heights, NY), J. I. Clark (University of Washington, Seattle, WA), M. Spiller (IBM, Yorktown Heights, NY), and S. H. Koenig (University of Washington, Seattle, WA), *Magnetic Resonance in Medicine* **10**, No. 3, 362-372 (1989).

The Parameter Iteration Method in Dynamic Programming, S. Gal (IBM Israel, Haifa 32000, Israel), *Management Science* **35**, No. 6, 675-684 (1989).

Evolution and Chemical State of Oxygen Upon Acid Dissolution of $\text{YBa}_2\text{Cu}_3\text{O}_{6.98}$, M. W. Shafer (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), R. A. de Groot (EMS, ED Nijmegen, The Netherlands), M. M. Plechaty, G. J. Scilla, B. L. Olson, and E. I. Cooper (IBM, Yorktown Heights, NY), *Materials Research Bulletin* **24**, No. 6, 687-693 (1989).

O

Absolute Optical Ranging with 200-nm Resolution, C. C. Williams and H. K. Wickramasinghe (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Optics Letters* **14**, No. 11, 542-544 (1989).

Stochastic Noise in TEM₀₀ Laser Beam Position, M. D. Levenson, W. H. Richardson, and S. H. Perlmuter (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Optics Letters* **14**, No. 15, 779-781 (1989).

P

Network Delay Considerations for Packetized Voice, P. M. Gopal and B. K. Kadaba (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Performance Evaluation* **9**, No. 3, 167-180 (1989).

Universality of Critical Screening in the Formation of Fractal Patterns, J. H. Kaufman (IBM Corporation, 650 Harry Road, San Jose, CA 95120), G. M. Dimino (University of California, Santa Cruz), and P. Meakin (E. I. du Pont de Nemours and Company, Wilmington, DE), *Physica A* **157**, No. 2, 656-668 (1989).

The Quantum Mechanics of Rotating and Translating Molecules: Raman Scattering, M. W. Evans (IBM Corporation, Neighborhood Road, Kingston, NY 12401), *Physica B* **154**, No. 3, 313-317 (1989).

Cell Mapping Techniques Applied to Josephson Junction Systems, A. Davidson and N. F. Pedersen (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physica D* **36**, Nos. 1 & 2, 173-180 (1989).

Quantum Mechanics of Rotating and Translating Molecules: Part 2, Far Infrared Spectrum of the Harmonic Oscillator/Rigid Rotor, M. W. Evans (IBM Corporation, Neighborhood Road, Kingston, NY 12401), *Physica Scripta* **39**, No. 6, 689-693 (1989).

Principles of Group-Theoretical Statistical Mechanics, M. W. Evans (IBM Corporation, Neighborhood Road, Kingston, NY 12401), *Physical Review A* **39**, No. 11, 6041-6044 (1989).

Information-Theoretic Specific Heat of Fractal Patterns, J. H. Kaufman (IBM Corporation, 650 Harry Road, San Jose, CA 95120) and G. M. Dimino (University of California, Santa Cruz), *Physical Review A* **39**, No. 11, 6045-6047 (1989).

Path-Integral Monte Carlo Study of the Neon Liquid-Vapor Interface, J. Q. Broughton (Naval Research Laboratory, Washington, DC 20375), F. F. Abraham, and J. A. Barker (IBM, San Jose, CA), *Physical Review A* **40**, No. 2, 924-930 (1989).

Dispersive Nature of Hole Transport in Polyvinylcarbazole, F. C. Bos, T. Guion, and D. M. Burland (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Physical Review B* **39**, No. 17, 12633-12641 (1989).

Noble-Metal Adsorption of Si(111): Medium-Energy Ion-Scattering Results for the $\text{Ag}(\sqrt{3} \times \sqrt{3})R 30^\circ$ Reconstruction, M. Copel and R. M. Tromp (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **39**, No. 17, 12688-12694 (1989).

Sequential Precursors in Dissociative Chemisorption: O_2 on Pt(111), A. C. Luntz, J. Grimblot, and D. E. Fowler (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Physical Review B* **39**, No. 17, 12903-12906 (1989).

Electronic and Structural Properties of a Discommensurate Monolayer System: $\text{GaAs}(110)-(1 \times 1)\text{Bi}$, A. B. McLean, R. M. Feenstra, A. Taleb-Ibrahimi, and R. Ludeke (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **39**, No. 17, 12925-12928 (1989).

Quasiclassical Behavior of Ballistic Electrons in a Perpendicular Magnetic Field, S. Bending, C. Zhang, K. v. Klitzing (Max Planck Institut für Festkörperforschung, Postfach 800665, 7000 Stuttgart 80, Federal Republic of Germany), E. Marclay, P. Guéret, and H. P. Meier (IBM, Rüschlikon, Switzerland), *Physical Review B* **39**, No. 17, 12981-12984 (1989).

Symmetry Breaking in Nitrogen-Doped Amorphous Carbon: Infrared Observation of the Raman-Active G and D Bands, J. H. Kaufman, S. Metin (IBM Corporation, 650 Harry Road, San Jose, CA 95120), and D. D. Saperstein (IBM, San Jose, CA), *Physical Review B* **39**, No. 18, 3053-3060 (1989).

Density Dependence of Radiative and Nonradiative Recombination Rates in a Gated $\text{GaAs}/\text{Ga}_{1-x}\text{Al}_x\text{As}$ Modulation-Doped Quantum Well, H. W. Liu, C. Delalande, G. Bastard, M. Voos (École Normale Supérieure, 24 rue Lhomond, F-75231 Paris 05, France), G. Peter, F. Fischer, E. O. Göbel (Philipps-Universität Marburg, Federal Republic of Germany), J. A. Brum (IBM, Yorktown Heights, NY),

G. Weimann, and W. Schlapp (Forschungsinstitut der Deutschen Bundespost, Darmstadt, Federal Republic of Germany), *Physical Review B* **39**, No. 18, 3537-3540 (1989).

Nonlocal Resonance Optical Phonons and the Local Properties of Ultrathin Ge Layers on Si(100), J. C. Tsang, S. S. Iyer, P. Pukite, and M. Copel (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **39**, No. 18, 13545-13548 (1989).

Oxygen-Diffusion-Induced Phase Boundary Migration in Copper Oxide Thin Films, J. Li, S. Q. Wang, J. W. Mayer (Cornell University, Ithaca, NY 14853), and K. N. Tu (IBM, Yorktown Heights, NY), *Physical Review B* **39**, No. 16-B, 12367-12370 (1989).

Boson Localization and the Superfluid-Insulator Transition, M. P. A. Fisher (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), P. B. Weichman (California Institute of Technology, Pasadena, CA), G. Grinstein (IBM, Yorktown Heights, NY), and D. S. Fisher (Princeton University, Princeton, NJ), *Physical Review B* **40**, No. 1, 546-570 (1989).

Excitations in a Nearly Half Filled Hubbard Model With $U = \infty$, S. E. Barnes (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **40**, No. 1, 723-726 (1989).

Electronic Properties of $\text{Sr}_{14}\text{Cu}_2\text{O}_{41}$, M. W. McElfresh, J. M. D. Coey, P. Strobel, and S. Von Molnar (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **40**, No. 1, 825-828 (1989).

Simple Formula for the Atomic Forces in the Augmented-Plane-Wave Method, J. M. Soler (Universidad Autónoma de Madrid, E-28049 Madrid, Spain) and A. R. Williams (IBM, Yorktown Heights, NY), *Physical Review B* **40**, No. 3, 1560-1564 (1989).

Observation and Characterization of a Strained Lateral Superlattice in the Oxidation of Ni(001), R. S. Saiki, A. P. Kaduwela, J. Osterwalder, C. S. Fadley (University of Hawaii at Manoa, 2545 The Mall, Honolulu, HI 96822), and C. R. Brundle (IBM, San Jose, CA), *Physical Review B* **40**, No. 3, 1586-1592 (1989).

Effects of Coverage on the Geometry and Electronic Structure of Al Overlayers on Si(111), R. J. Hamers (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **40**, No. 3, 1657-1671 (1989).

Defects and Metal States: Towards a Predictive Model for the Schottky Barrier, R. Ludeke (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **40**, No. 3, 1947-1950 (1989).

Reply to "Comment on 'Ground State of the Strong-Coupling Hubbard Hamiltonian: A Numerical Diagonalization Study'", E. Kaxiras (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), and E. Manousakis (Florida State University, Tallahassee, FL), *Physical Review B* **40**, No. 4, 2596-2597 (1989).

Raman Scattering from Superconducting Gap Excitations in $\text{Ti}_2\text{Ca}_2\text{Ba}_2\text{Cu}_3\text{O}_{10}$ Single Crystals, M. C. Krantz, H. J. Rosen (IBM Corporation, 650 Harry Road, San Jose, CA 95120), J. Y. T. Wei, and D. E. Morris (Lawrence Berkeley Laboratory, Berkeley, CA), *Physical Review B* **40**, No. 4, 2635-2638 (1989).

Surface Structural and Electronic Properties of Cleaved Single Crystals of $\text{Bi}_{2.15}\text{Sr}_{1.7}\text{CaCu}_2\text{O}_{8.45}$ Compounds: A Scanning Tunneling Microscopy Study, C. K. Shih, R. M. Feenstra, J. R. Kirtley, and G. V. Chandrashekar (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review B* **40**, No. 4, 2682-2685 (1989).

Influence of Geometry on the Hall Effect in Ballistic Wires, C. J. B. Ford, S. Washburn, M. Büttiker, C. M. Knoedler, and J. M. Hong (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review Letters* **62**, No. 23, 2724-2727 (1989).

Magnetic Penetration Depth of $\text{YBa}_2\text{Cu}_3\text{O}_7$, Reply, R. L. Greene, L. Krusin-Elbaum, and A. P. Malozemoff (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review Letters* **62**, No. 24, 2886 (1989).

Electrochemical Experiments in Cold Nuclear Fusion, J. F. Ziegler, T. H. Zabel, J. J. Cuomo, V. A. Brusica, G. S. Cargill III, E. J. O'Sullivan, and A. D. Marwick (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review Letters* **62**, No. 25, 2929-2932 (1989).

Observation of Electromagnetic Shock Waves from Propagating Surface-Dipole Distributions, Ch. Fattinger and D. Grischkowsky (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review Letters* **62**, No. 25, 2961-2964 (1989).

Quantum Effects in the Scattering of Argon from 2H-W(100), E. K. Schweizer and C. T. Rettner (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Physical Review Letters* **62**, No. 26, 3085-3088 (1989).

Optical and Electrical Enhancement of Flux Creep in $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ Epitaxial Films, E. Zeldov, N. M. Amer, G. Koren, A. Gupta, R. J. Gambino, and M. W. McElfresh (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review Letters* **62**, No. 26, 3093-3096 (1989).

rf Spectroscopy in an Atomic Fountain, M. A. Kasevich, E. Riis, S. Chu (Stanford University, Stanford, CA 94305), and R. G. DeVoe (IBM, San Jose, CA), *Physical Review Letters* **63**, No. 6, 612-616 (1989).

Surfactants in Epitaxial Growth, M. Copel, M. C. Reuter, E. Kaxiras, and R. M. Tromp (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Physical Review Letters* **63**, No. 6, 632-635 (1989).

Electronic Transitions at the $\text{CaF}_2/\text{Si}(111)$ Interface Probed by Resonant Three-Wave-Mixing Spectroscopy, T. F. Heinz, F. J. Himpsel, E. Palange (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), and E. Burnstein (University of Pennsylvania, Philadelphia, PA), *Physical Review Letters* **63**, No. 6, 644-647 (1989).

The Generation of Vortices in High Resolution, Two-Dimensional Decaying Turbulence and the Influence of Initial Conditions on the Breaking of Self Similarity, P. Santangelo, R. Benzi (IBM European Center for Scientific and Engineering Computing, Via Giorgione 159, 00147 Rome, Italy), and B. Legras (École Normale Supérieure, Paris, France), *Physics of Fluids A* **1**, No. 6, 1027-1034 (1989).

Turbulence in a Randomly Stirred Fluid, R. Panda, V. Sonnad, E. Clementi (IBM Corporation, Neighborhood Road, Kingston, NY 12401), S. A. Orszag, and V. Yakhot (Princeton University, Princeton, NJ), *Physics of Fluids A* **1**, No. 6, 1045-1053 (1989).

A Plasma Source for Fourier Transform Mass Spectrometry, J. L. Shohet, W. L. Phillips, A. R. T. Lefkow, J. W. Taylor, C. Bonham (University of Wisconsin, Madison, WI 53706), and J. T. Brenna (IBM, Endicott, NY), *Plasma Chemistry and Plasma Processing* **9**, No. 2, 207-215 (1989).

Synthesis of Imide-Aryl Ether Benzoxazole Block Copolymers, J. L. Hedrick, J. G. Hilborn, J. W. Labadie, and W. Volksen (IBM Corporation, 650 Harry Road, San Jose, CA 95120), *Polymer Bulletin* **22**, No. 1, 47-53 (1989).

Polysilanes: Photochemistry and Deep UV Lithography, R. D. Miller, G. Wallraff, N. Clecak, R. Sooriyakumaran (IBM Corporation, 650 Harry Road, San Jose, CA 95120), A. J. Michl, T. Karatsu, A. J. McKinley, K. A. Klingensmith, and J. Downing (University of Texas, Austin), *Polymer Engineering and Science* **29**, No. 13, 882-886 (1989).

X-Ray Diffraction Studies of Thin Films and Multilayer Structures, A. Segmuller, I. C. Noyan (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), and V. S. Speriosu (IBM, San Jose, CA), *Progress in Crystal Growth and Characterization* **18**, 21-66 (1989).

Multifractal Measures, Especially for the Geophysicist, B. B. Mandelbrot (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Pure and Applied Geophysics* **131**, No. 1-2, 5-42 (1989).

Q

Examining Processes Improves Operations, W. J. McCabe (IBM Corporation, Somers, NY 10589), *Quality Progress* **22**, No. 7, 26-32 (1989).

R

Instrumentation for Millisecond-Resolution Scattering Studies, G. B. Stephenson, K. F. Ludwig, Jr., J. L. Jordan-Sweet (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), S. Brauer, J. Mainville, Y. S. Yang, and M. Sutton (McGill University, Montreal, Quebec, Canada), *Review of Scientific Instruments* **60**, No. 7, Part 11A, 1537-1540 (1989).

Soft X-Ray Imaging with the 35 Period Undulator at the NSLS, C. Buckley, H. Rarback, R. Alforque, D. Shu (NSLS, Brookhaven National Laboratory, Upton, NY 11973), H. Ade, S. Hellman, N. Iskander, J. Kirz, S. Lindaas, I. McNulty (IBM, Yorktown Heights, NY), D. Attwood, R. DiGennaro, M. Howells, C. Jacobson, Y. Vladimirovsky, R. Rothman (Lawrence Berkeley Laboratory, Berkeley, CA), D. Kern, and D. Sayre (IBM, Yorktown Heights, NY), *Review of Scientific Instruments* **60**, No. 7, 2444-2447 (1989).

S

Smectic Liquid Crystal Monolayers on Graphite Observed by Scanning Tunneling Microscopy, D. P. E. Smith, H. Hörber, Ch.

Gerber, and G. Binnig (IBM Corporation, D-8000 Munich 40, Federal Republic of Germany), *Science* **245**, No. 4913, 43-45 (1989).

Electron Velocity in GaAs: Bulk and Selectively Doped Heterostructures, W. T. Masselink (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Semiconductor Science and Technology* **4**, No. 7, 503-512 (1989).

A New Pebble Game that Characterizes Parallel Complexity Classes, H. Venkateswaran (University of Washington, Seattle, WA 98195) and M. Tompa (IBM, Yorktown Heights, NY), *SIAM Journal on Computing* **18**, No. 3, 533-549 (1989).

Two Applications of Inductive Counting for Complementarity Problems, A. Borodin, S. A. Cook (University of Toronto, Toronto M5S 1A4, Ontario, Canada), P. W. Dymond (University of California at San Diego, La Jolla, CA), W. L. Ruzzo (University of Washington, Seattle, WA), and M. Tompa (IBM, Yorktown Heights, NY), *SIAM Journal on Computing* **18**, No. 3, 559-578 (1989).

A Fast Algorithm for Multiprocessor Scheduling of Unit-Length Jobs, B. B. Simons (IBM Corporation, 650 Harry Road, San Jose, CA 95120) and M. K. Warmuth (University of California, Santa Cruz, CA), *SIAM Journal on Computing* **18**, No. 4, 690-710 (1989).

Minimum-Knowledge Interactive Proofs for Decision Problems, Z. Galil (Columbia University, New York, NY 10027), S. Haber (Bell Communications Research, Morristown, NJ), and M. Yung (IBM, Yorktown Heights, NY), *SIAM Journal on Computing* **18**, No. 4, 711-739 (1989).

Time/Space Trade-Offs for Reversible Computation, C. H. Bennett (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *SIAM Journal on Computing* **18**, No. 4, 766-776 (1989).

The Curious Case of the $[\text{Cu}^{2+}]$ Electron Paramagnetic Resonance in High- T_c Superconductors and Related Antiferromagnets, F. Mehran (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598) and P. W. Anderson (Princeton University, Princeton, NJ), *Solid State Communications* **71**, No. 1, 29-31 (1989).

Topography and Local Conductance Images of $\text{YBa}_2\text{Cu}_3\text{O}_7$ Crystals Fractured in Ultra High Vacuum, C. J. Chen and C. C. Tsuei (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Solid State Communications* **71**, No. 1, 33-38 (1989).

The Structure of $\text{Y}_1\text{Ba}_2\text{Cu}_3\text{O}_{7-x}$ and Its Derivatives, R. Beyers (IBM Corporation, 650 Harry Road, San Jose, CA 95120) and T. M. Shaw (IBM, Yorktown Heights, NY), *Solid State Physics* **42**, 135-212 (1989).

On Genes and Graphics, C. A. Pickover (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Speculations in Science and Technology* **12**, No. 1, 5-15 (1989).

CdTe-CdMnTe Superlattices, L. L. Chang (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Superlattices and Microstructures* **6**, No. 1, 39-45 (1989).

Antibonding Surface State Band of the $\text{Ge}(111) 2 \times 1$ Surface, J. M. Nicholls and B. Reihl (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Surface Science* **218**, No. 1, 237-245 (1989).

T

Techniques for Parallel Manipulation of Sparse Matrices, C. P. Kruskal (University of Maryland, College Park, MD 20742), L. Rudolph (The Hebrew University of Jerusalem, Israel), and M. Snir (IBM, Yorktown Heights, NY), *Theoretical Computer Science* **64**, No. 2, 135–157 (1989).

U

Grain Boundary Structure and Migration, D. A. Smith (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Ultramicroscopy* **29**, Nos. 1/4, 1–8 (1989).

On the Preparation of Cross-Sectional TEM Samples Using Lithographic Processing and Reactive Ion-Etching, J. T. Wetzel, M. Jost, S. A. Rishton, P. M. Fryer, K. T. Kwietniak, D. Klaus, J. J. Bucchignano, C.-K. Hu, and T. J. Brown, Jr. (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Ultramicroscopy* **29**, Nos. 1/4, 110–114 (1989).

Application of Transmission Electron Microscopy to the Observation of Dislocation Emission from Crack Tips at Elevated Temperatures, D. R. Clarke and Y.-H. Chiao (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Ultramicroscopy* **29**, Nos. 1/4, 203–211 (1989).

Multiple Structures in a $\Sigma = 27$ Related Boundary in Germanium, D. A. Smith (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), Z. Elgat (Cornell University, Ithaca, NY), W. Krakow, A. A. Levi (IBM, Yorktown Heights, NY), and C. B. Carter (Cornell University, Ithaca, NY), *Ultramicroscopy* **30**, Nos. 1/2, 8–12 (1989).

Dislocation Reaction in a $\Sigma = 41$ Related Asymmetrical Tilt Boundary in Gold, H. Norden (Chalmers University of Technology, S-412 96 Göteborg, Sweden) and D. A. Smith (IBM, Yorktown Heights, NY), *Ultramicroscopy* **30**, Nos. 1/2, 33–37 (1989).

In-Situ Studies of the Crystallization of Amorphous CoSi₂ Films, D. A. Smith, K. N. Tu, and B. Z. Weiss (IBM Corporation, P.O. Box 218, Yorktown Heights, NY 10598), *Ultramicroscopy* **30**, Nos. 1/2, 90–96 (1989).

Z

Verified Results Via Contractivity and Internal Arithmetic, T. Merschen (IBM Germany GmbH, Schönaicher Strasse 220, D-7030 Böblingen, Federal Republic of Germany), *Zeitschrift für Angewandte Mathematik und Mechanik* **69**, No. 4, T47–T49 (1989).

Minimal Solutions and Generalized Continued Fractions, T. Hanschke (IBM Germany GmbH, Schönaicher Strasse 220, D-7030 Böblingen, Federal Republic of Germany), *Zeitschrift für Angewandte Mathematik und Mechanik* **69**, No. 4, T124–T126 (1989).

On the Convergence of Wave Solutions in Surface Scattering Problems, W. A. Schlup (IBM Corporation, Säumerstrasse 4, 8803 Rüschlikon, Switzerland), *Zeitschrift für Angewandte Mathematik und Mechanik* **69**, No. 4, T164–T165 (1989).

Auger and Electron Energy Loss Spectroscopies of Small Palladium Particles Supported on (111) Oriented MgO Films, C. R. Henry (CNRS, F-13288 Marseille, France) and H. Poppa (IBM, San Jose, CA), *Zeitschrift für Physik D* **12**, Nos. 1/4, 421–424 (1989).

Electrical and Magnetic Properties of Thin Films Containing Metal Clusters, C. Laurent (University of Toulouse 3, 118 Route Harbonne, F-31062 Toulouse, France) and E. Kay (IBM, San Jose, CA), *Zeitschrift für Physik D* **12**, Nos. 1/4, 465–467 (1989).

Cluster Model Study of the Interaction of Halogen Atoms with Ag Clusters, G. Pacchioni (University of Milan, I-20133 Milan, Italy), P. S. Bagus, and M. R. Philpott (IBM, San Jose, CA), *Zeitschrift für Physik D* **12**, Nos. 1/4, 543–546 (1989).