PUBLICATIONS

Aamodt, L. C. "Dimensionality Viewed from a Thermal Perspective," in *Proc. Photoacoustic and Photothermal Phenomena III*, Springer-Verlag, Berlin, Heidelberg, and New York, pp. 245–247 (1992).

Adrian, F. J., and Cowan, D. O., "The New Superconductors," *Chem. Eng. News* **70**(51), 24–41 (21 Dec 1992).

Bankman, I. N., and Aba, D. W., "Fast Learning in Feedforward Neural Networks by Migrating Hidden Unit Outputs," in *Proc. Intelligent Engineering Systems Through Artificial Neural Networks*, ASME Press, New York, pp. 179–184 (1992).

Bargeron, C. B., Murphy, R. A., and Benson, R. C., "Light Emission from Materials Bombarded with Electrons or Oxygen Ions," *Surf. Sci.* **279**(1, 2), 181–188 (1 Dec 1992).

Blum, B. I., "The Role of Computer Software and Systems Programming in the Development of Medical Informatics Systems," in *Proc. 5th Int. Conf. on System Science in Health Care Health Systems—The Challenge of Change*, SSHC, Omnipress, Prague, Czechoslovakia, pp. 1183–1186 (1992).

——, "The Dynamics of a Clinical Information System," in *Proc. MEDINFO 92*, North Holland, Amsterdam, pp. 168–173 (1992).

——, "On the Transformation from a Fragment-Based Design into a Module-Based Implementation," in *Proc. Tools with Artificial Intelligence 92*, IEEE Computer Society, Washington, D.C., pp. 56–64 (1992).

——, "The Evolution of Software Engineering," in *Proc. Information and Knowledge Management 1992*, Baltimore, Md., pp. 35–41 (1992).

——, "A Multidimensional Approach to Application Development," in *Computer Applications and Design Abstractions*, Tanik, M., Ertas, A., and Cooke, D. (eds.), ASME Press, New York, PD-Vol. 43, pp. 87–90 (1992).

——, "Medical Informatics," in *Encyclopedia of Microcomputers*, Kent, A., and Williams, J. G. (eds.), Marcel Dekker, Inc., New York, Vol. 11, pp. 17–35 (1993).

——, "Formalism and Prototyping in the Software Process," in *Program Verification*, Colburn, T. R., et al. (eds.), Kluwer Academic Publishers, Amsterdam, pp. 213–238 (1993).

Blum, B. I. (APL), and Moore, T. (NSWC), "Representing Navy Tactical Computer System Knowledge for Reengineering and Interpretation," in *Proc. 2nd Int. Conf. on Systems Integration*, IEEE Computer Society, Washington, D.C., pp. 530–537 (1992).

Blum, B. I., and Semmel, R. D., "Medical Informatics, Knowledge, and Expert Systems," in *Proc. 4th Annual IEEE Symp. on Computer-Based Medical Systems*, IEEE Computer Society, Washington, D. C., pp. 212–218 (1991).

Bohandy, J., Kim, B. F., Moorjani, K., and Adrian, F. J., "Evidence for Weak Link Effects in Epitaxial Thin Films of YBCO on $LaAlO_3$," in *Layered Superconductors: Fabrication, Properties and Applications, Proc. Materials Research Society Symp.*, Shaw, D. T., Tsuei, C. C., Schneider, T. R., and Shiohara, Y. (eds.), Vol. 275, pp. 879–883 (1992).

Bohandy, J., Kim, B. F., Moorjani, K., and Adrian, F. J. (APL), and Kaiser, D. L., Swartzendruber, L. J., Gayle, F. W., and Bennett, L. H. (NIST), "Twin Boundaries, Impurities, and Anisotropy in $YBa_2Cu_3O_{7-\delta}$ Single Crystals," *Physica C* **203**, 139–143 (1992).

Boiarsky, C. (Effective Comm. Assoc.), Earnest, P. J. (Branson Ultrasonics Corp.), Grove, L. K. (Battelle), Northrop, B. A. (APL), and Phillips, M. T. (Air Products), "Women in Technical Communication: Crossing the Corporate Frontier," in *Proc. IEEE Inter. Professional Communications Society, IPCC-92 Conf. Record*, Santa Fe, N.M., pp. 482–488 (1992).

Chang, G. Y., Givens, R. B., Spicer, J. W. M., and Murphy, J. C., "Electron-Induced Ionization and Thermalization in CdS Using Optical Beam Deflection Imaging," in *Proc. Photoacoustic and Photothermal Phenomena III*, Springer-Verlag, Berlin, Heidelberg, and New York, pp. 363–365 (1992).

Cheng, A. F. (APL), Maclennan, C. G. (AT&T Bell Labs.), Mauk, B. H., and Krimigis, S. M. (APL), and Lanzerotti, L. J. (AT&T Bell Labs.), "Energetic Ion Phase Space Densities in Neptune's Magnetosphere," *ICARUS* **99**, 420–429 (1992).

Erlandson, R. E., Anderson, B. J., and Zanetti, L. J., "Viking Magnetic and Electric Field Observations at Periodic pc 1 Waves = Pearl Pulsations," *J. Geophys. Res.* **97**(A10), 14,823–14,832 (Oct 1992).

Fainchtein, R. (APL), D'Arcangelis, S. T., Yang, S. S., and Cowan, D. O. (JHU), and Yoon, S., Pan, S., Smith, W. F., and deLozanne, A. L. (Univ. Texas at Austin), "Scanning Tunneling and Force Microscopies of Low-Dimensional Organic Conductors and Superconductors," in *Proc. Scanning Probe Microscopies II Conf.*, Paper 1855, SPIE, Bellingham, Wash. (18–19 Jan 1993).

Farrell, R. A., Freund, D. E., and McCally, R. L., "Hierarchical Structure and Light Scattering in the Cornea," in *Proc. Materials Research Society Symp.*, Vol. 255, pp. 233–246 (1992).

Gersh, J. R., and Hamill, B. W., "Cognitive Engineering of Rule-Based Supervisory Control Systems: Effects of Concurrent Automation," in *Proc. IEEE Int. Conf. on Systems, Man, and Cybernetics*, Chicago, Ill., pp. 1208–1213 (Oct 1992).

Heins, R. J., "Command Center for the SDI Delta 181 Sensor Module," in *Proc. Int. Telemetering Conf. (ITC)*, San Diego, Calif., Vol. 28, pp. 287–297 (29 Oct 1992).

Jette, A. N., and Benson, R. C., "Modeling of Pulsed-Laser Cleaning of a Gold Mirror Surface," in *Proc. Optical System Contamination: Effects, Measurement, Control III*, SPIE, Bellingham, Wash., Vol. 1754, pp. 324–343 (1992).

Kane, M., Mauk, B. H., Keath, E. P., and Krimigis, S. M., "A Convected K Distribution Model for Hot Ions in the Jovian Magnetodisc," *Geophys. Res. Lett.* **19**(14), 1435–1438 (1992).

Kim, B. F., Moorjani, K., Adrian, F. J., and Bohandy, J., "Magnetically Modulated Resistance Techniques," in *Magnetic Susceptibility of Superconductors and Other Spin Systems*, Hein, R. A., Francaville, T. I., and Liebenberg, D. H. (eds.), Plenum Press, New York, p. 531 (1991).

Kinnison, J. D., Maurer, R. H., McKerracher, P. L., and Carkhuff, B. G., "A Summary of Recent VLSI SEU and Latch-up Testing," in *Proc. 1992 IEEE Radiation Effects Data Workshop*, New Orleans, La., pp. 12–15 (14 Jul 1992).

Kistenmacher, T. J., Ecelberger, S. A., and Bryden, W. A., "Initial Studies on the Heteroepitaxial Growth of Thin Films of (Al/In)N on AlN-Seeded (00.1) Sapphire by Single-Target Reactive Magnetron Sputtering," in *Proc. Materials Research Society Symp.*, Vol. 263, pp. 95–100 (1992).

Kopp, D. L., "Solder Grain Structure Implications for High-Reliability Surface Mount Attachment," in *Proc. 17th Annual Electronics Manufacturing Seminar*, Naval Air Warfare Center, China Lake, Calif., pp. 177–193 (2–4 Feb 1993).

Kopp, D. L., and Bevan, M. G., "Conductive Adhesive Substitutes for Tin-Lead Solder," in *Proc. NEPCON West '93*, Anaheim, Calif., pp. 1501–1509 (1993).

Kosmin, L. J., "Teaching Internet End-Users Effective Searching Strategies Across Diversified Databases," in *Proc. 16th Int. Online Information Meeting*, London, England, pp. 225–231 (1992).

Krimigis, S. M., "Interplanetary Medium, Solar Cosmic Rays," in *The Astronomy and Astrophysics Encyclopedia*, Marahn, S. P. (ed.), Van Nostrand Reinhold, New York, pp. 332–336 (1992).

——, "Particles and Fields Measurements at Neptune with Voyager 2," *Adv. Space Res.* **12**(11), 55–70 (1992).

——, "The Magnetosphere of Neptune," *The Planetary Report* **12**(2), 10–13 (Mar/Apr 1992).

Ku, H.-C., "A Submerged Body Moving in a Stratified Medium via Domain in Decomposition Technique," in *Proc. 5th Int. Symp. on Domain Decomposition Methods for Partial Differential Equations*, SIAM, Philadelphia, Pa., pp. 498–505 (1992).

Kues, H. A. (APL), Monahan, J. C. (FDA), D'Anna, S. A. (JHMI), McLeod, D. S. (APL), Lutty, G. A., (JHMI), and Koslov, S. (APL), "Increased Sensitivity of the Non-Human Primate Eye to Microwave Radiation Following Ophthalmic Drug Pretreatment," *Bioelectromagnetics* **13**, 379–393 (1992).

Lanzerotti, L. J. (AT&T Bell Labs.), Armstrong, T. P. (Univ. Kansas), Gold, R. E. (APL), Anderson, K. A. (Univ. Ca-

lif.), Krimigis, S. M. (APL), Lin, R. P. (Univ. Calif.), Pick, M. (Observatoire de Paris), Roelof, E. C. (APL), Sarris, E. T. (Univ. Thrace, Greece), Simnett, G. M. (Univ. Birmingham, United Kingdom), Maclennan, C. G. (AT&T Bell Labs.), Choo, H. T. (Univ. Kansas), and Tappin, S. J. (Univ. Birmingham, United Kingdom), "The Hot Plasma Environment at Jupiter: Ulysses Results," *Science* **257**, 1518-1524 (1992).

Lutz, S. A., "Correlation of Type III Turbulent Shock Interaction Heating Data on a Hemisphere," *Am. Inst. Aeronaut. Astronaut. J.* **30**(12), 2973-2974 (1992).

McCally, R. L., Farrell, R. A., and Bargeron, C. B., "Cornea Epithelial Damage Thresholds in Rabbits Exposed to Tm:YAG Laser Radiation at 2.02 μm," *Lasers Surg. Med.* **12**(6), 598-603 (Dec 1992).

Meyer, R. A. (APL), and Davis, K. D., Raja, S. N., and Campbell, J. N. (JHMI), "Sympathectomy Does Not Abolish Bradykinin-Induced Cutaneous Hyperalgesia in Man," *Pain* **51**, 323-327 (1992).

Nelson, C. V., and Allison, J. B., "Expendable Meteorological Buoy System for High Sea States," in *Proc. MTS '92: Global Ocean Partnership*, Washington, D.C., pp. 949-953 (19-21 Oct 1992).

Northrop, B. A., "Publications Organizational Model—Maximum Staff Utilization," in *Proc. IEEE Int. Professional Communications Society IPCC-92 Conf. Record*, Santa Fe, N.M., pp. 391-395 (1992).

Paxton, L. J., Meng, C.-I., Fountain, G. H., Ogorzalek, B. S., Darlington, E. H., Gary, S. A., Goldsten, J. O., Kusnierkiewicz, D. Y., Lee, S. C., Linstrom, L. A., Maynard, J. J., Peacock, K., Persons, D. F., and Smith, B. E., "Special Sensor Ultraviolet Spectrographic Imager (SSUSI): An Instrument Description," in *Proc. Instrumentation for Planetary and Terrestrial Atmospheric Remote Sensing*, Paper 1745, SPIE, Bellingham, Wash., pp. 1-15 (1992).

——, "SSUSI: An Horizon to Horizon and Limb Viewing Spectrographic Imager-UV Remote Sensing," in *Proc. SPIE Ultraviolet Technology IV*, SPIE Int. Symp. on Optical Applied Science and Engineering, Paper 1764, SPIE, Bellingham, Wash., pp. 161-176 (1993).

Penn, J. E., and Moore, C. R., "Model Verification of Passive MMIC Structures Through Measurement and 3D Finite Element Simulation," in *Proc. 3rd Annual Johns Hopkins Univ. Microwave Symp.*, Baltimore, Md., pp. I1-I13 (1992).

Phillips, T. E., Morgan, J. S., Goodwin, P. G., Sadilek, A. C., and Benson, R. C., "Outgassing Measurements on Actuator Used for Solar Array Deployment," in *Proc. SPIE Int. Society for Optical Engineering-Optical System Contamination: Effects, Measurement, Control III*, San Diego, Calif., Vol. 1754, pp. 195-204 (1992).

Reilly, J. P., and Lin, C. C. (APL), and Rudie, S. A. (General Physics Corp.), "Land Clutter and Shadowing with Consideration of Propagation in Coastal Regions," in *Proc. Radar 1992*, IEE, Brighton, England, pp. 26-29 (1992).

Roberts, J. C., Biermann, P. J., and Wienhold, P. D., "Design of a Composite Material Angle Sample Bending Test Fixture," *Experimental Techniques* **16**(5), 39-42 (Sep/Oct 1992).

Rouseff, D., "Simulated Microwave Propagation Through Tropospheric Turbulence," *IEEE Trans. Antennas Propag.* **40**(9), 1076-1083 (Sep 1992).

Sarris, E. T. (APL), Anagnostopoulos, G. C. (Univ. Thrace, Greece), and Krimigis, S. M. (APL), "Absence of Upstream Energetic Ions Under Turbulent Radial Interplanetary Magnetic Field," *J. Geophys Res.* **97**(A6), 8231-8237 (1992).

Schaefer, J. (Max-Planck-Institut für Astrophysik), and Monchick, L. (APL), "Line Broadening of HD Immersed in He and H₂ Gas," *Astron. Astrophys.* **265**, 859-868 (1992).

Schetz, J. A. (Virginia Tech. U.), and Billig, F. S., Favin, S., and Gilreath, H. E. (APL), "Effects of Pressure Mismatch on Slot Injection in Supersonic Flow," *Int. J. Turbo & Jet Engines* **9**, 135-146 (1992).

Semmel, R. D., "An Integrated System for Query Formulation and Database Design," in *Proc. IEEE 4th Annual Int. Conf. on Software Engineering and Knowledge Engineering*, Washington, D.C., pp. 40-46 (1992).

——, "QUICK: A System that Uses Conceptual Design Knowledge for Query Formulation," in *Proc. 4th Int. Conf. on Tools with Artificial Intelligence*, Arlington, Va., pp. 214-221 (1992).

——, "Discovering Context in a Conceptual Schema," in *Proc. ISMM Information and Knowledge Management CIKM-92*, Baltimore, Md., pp. 222-230 (1992).

Sommerer, J. C. (APL), and Ott, E. (Univ. Maryland), "Particles Floating on a Moving Fluid: A Dynamically Comprehensible Physical Fractal," *Science* **259**, 335-339 (1993).

Sorensen, T. E., and England, W. B. (U. Wisconsin-Milwaukee), and Silver, D. M. (APL), "Quantum Field Theoretical Methods in Chemically Bonded Systems III, BCSLN-HL(N) Potential Energy Curves for the Ground States of H₂, LiH, FH and F₂," *Theor. Chim. Acta* **84**, 21-35 (1992).

——, "Quantum Field Theoretical Methods in Chemically Bonded Systems IV, Analysis of Perturbative Energy Terms for H₂, LiH, FH and F₂," *Theor. Chim. Acta* **84**, 37-53 (1992).

Sorensen, T. E., and England, W. B. (U. Wisconsin-Milwaukee), Silver, D. M. (APL), and Steinborn, E. O. (U. Regensburg, Germany), "Quantum Field Theoretical Methods in Chemically Bonded Systems II, Diagrammatic Perturbation Theory," *Theor. Chim. Acta* **84**, 1-19 (1992).

Spall, J. C., and Cristion, J. A., "Direct Adaptive Control of Nonlinear Systems Using Neural Networks and Stochastic Approximation," in *Proc. IEEE Conf. Decision Control*, Tucson, Ariz., pp. 878-883 (1992).

Spicer, J.W.M., Aamodt, L. C., Kerns, W. D., and Murphy, J. C., "Competition Between Normal and Transverse Heat Flow in Time-Resolved Infrared Radiometry (TRIR)," in *Proc. Photoacoustic and Photothermal Phenomena III*, Springer-Verlag, Berlin, Heidelberg, and New York, pp. 516-518 (1992).

Suter, J. J., Cloeren, J. M., Norton, J. R., and Reinhart, M. J., "Quartz Oscillators, Frequency Synthesizers and Timing Systems for Geodesy and Radio Science Applications," in *Proc. 6th European Frequency and Time Forum*, Noordwijk, The Netherlands, pp. 427-430 (1992).

Suter, J. J., Maurer, R. H, and Kinnison, J. D. (APL), Besson, R. (Ecole National Supérierue, France), Vig, J. R. (USA ERADCOM), and A. Koehler (Harvard Univ.), "The Effects of Ionizing and Particle Radiation on Precision Frequency Standards," in *Proc. 46th Annual Symp. on Frequency Control*, New York, pp. 798-806 (1992).

Suter, J. J. (APL), and Poret, J. C., and Rosen, M. (JHU), "Fiber Optic Ionizing Radiation Detector," *IEEE Trans. Nuclear Science* **NS39**(4), 674-679 (1992).

Valverde, C. R., and Fowler, K. R., "A Cellular Logic Operation ASIC for High Performance Image Processing," in *Proc. 1992 Government Microcircuits and Applications Conf.*, Las Vegas, Nev., pp. 423-426 (1992).

Watson, G. (Univ. Bristol, United Kingdom), and Chapman, R. D., and Apel, J. R. (APL), "Measurements of the Internal Wave Wake of a Ship in a Highly Stratified Sea Loch," *J. Geophys. Res.* **97**(C6), 9689-9703 (1992).

Yep, G. L. (JHU), Adrian, F. J. (APL), Cowan, D. O. (JHU), and Bohandy, J., Kim, B. F., and Moorjani, K. (APL), "Insensitivity of Rb₃C₆₀ to Gamma Irradiation," *Appl. Phys. Lett.* **61**(15), 1850-1851 (1992).

PRESENTATIONS

Adrian, F. J., "Stochastic Liouville Model of Antiphase Chemically Induced Electron Spin Polarization in Geminate Radical Pairs," Symp. on Magnetic Field and Spin Effects in Chemistry, Konstanz, Germany (26-31 Jul 1992).

Benson, R. C., Bargeron, C. B., and Phillips, T. E., "Dendritic Growth Induced by an Electron Beam," 39th National American Vacuum Society Symp., Chicago, Ill. (9-13 Nov 1992).

Benson, R. C., and Phillips, T. E., "Outgassing Measurements on Microelectronic Polymers and Electrical Current Leakage Investigations," Advanced Technology Workshop on Microcircuit Internal Atmosphere, Santa Barbara, Calif. (28-30 Jul 1992).

Benson, R. C., Phillips, T. E., Romenesko, B. M., and Uy, O. M., "Investigations of Electrical Current Leakage in Microelectronics," Microelectronics Workshop, Blue Mountain Lake, New York (29 Sep-2 Oct 1992).

Blum, B. I., "Software Engineering and Knowledge Engineering in Medical Informatics," National Research Council Seminar, Milan, Italy (24 Jun 1992).

——, "Medical Software Engineering," Columbia University School of Medicine

Seminar, Columbia University, New York (17 Dec 1992).

Chang, Y., and Ecker, J. A., "Thermoplastic Analysis of General-Purpose Heat-Source Modules," 31st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nev. (11–14 Jan 1993).

Crowley, G., "Neutral Density Structures in the Lower Thermosphere at High Latitudes," Chapman Conf. on Mesosphere and Lower Thermosphere, Asilomar, Calif. (16-20 Nov 1992).

Dockery, G. D., Huffaker, J. D., Kuttler, J. R., Mrazek, C. P., and Konstanzer, G. C., "Impedance and Rough Surface Boundaries in PE/SPLIT-STEP Propagation Models," National Radio Science Meeting, Univ. Colorado, Boulder (5-8 Jan 1993).

Dyer, J. S. (Utah State Univ.), Benson, R. C., and Phillips, T. E. (APL), and Guregian, J. J. (Space Sensors Group), "Outgassing Analyses Performed During Vacuum Bakeout of Components Painted with Chemglaze Z306/9922," SPIE 1992 Int. Symp. on Optical Applied Sci. and Eng., San Diego, Calif. (19-24 Jul 1992).

Kosmin, L. J., "New Vistas in Professional Communications: The Internet Connection; a Tutorial," Crossing Frontiers; Int. Professional Communications Conf., Santa Fe, N.M. (1 Oct 1992).

Lin, R. Q., and Ku, H.-C., "A Study of Surface Ships Impinged by Solitary Waves," Western Pacific AGU Meeting, Hong Kong (17-21 Aug 1992).

Lutz, S. A., and Chan, C. C., "Ablation Response Testing of Aerospace Power Supplies," 31st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nev. (11–14 Jan 1993).

Maryak, J. L., "Isolating Errors in State-Space Models of Complex Systems," 5th Advanced Technology Conf., Washington, D.C. (30 Nov 1992).

Nhan, E., Chao, K., Maurer, R. H., and Bargeron, C. B., "Qualification of GaAs Power MESFETs for Space Applications," 1992 GaAs Reliability Workshop, Miami Beach, Fla. (4 Oct 1992).

Nylund, S. R., "Information System Support of Science Objectives," Discipline Data System Forum, The MITRE Corp., McLean, Va. (9-10 Nov 1992).

Phillips, T. E., Morgan, J. S., Goodwin, P. G., Sadilek, A. C., and Benson, R. C., "Outgassing Measurements on Actuator Used for Solar Array Deployment," SPIE 1992 Int. Symp. on Optical Applied Sci. and Eng., San Diego, Calif. (19-24 Jul 1992).

Raul, R., and Geckle, W. J. (APL), Aversono, T. (JHMI), and Walford, G. (St. Joseph's Hospital, Syracuse, N.Y.), "Visualization and Numerical Modeling of Disturbed Flows Observed in Cineangiography," IEEE Computers in Cardiology, Durham, N.C. (11-14 Oct 1992).

——, "Visualization and Numerical Modeling of Disturbed Flows Observed in Cineangiography," Symp. on Computing and High-Performance Biomedical Research, Research Triangle Park, N.C. (14–15 Oct 1992).

Sigillito, V. G., "Neural Networks as Pattern Recognizers," NRL Colloquium to the Condensed Matter & Radiation Sciences Division, NRL, Washington, D.C. (13 Jan 1993).

Spall, J. C., "Neural Networks and Adaptive Control," RAND Corp. Operations Research Group Seminar, Santa Monica, Calif. (3 Nov 1992).

Williamson, C. L., "High Involvement Strategic Planning: A Case Study," 55th Annual Meeting of the American Society for Information Science, Pittsburgh, Pa. (26-29 Oct 1992).

The following papers were presented at the Mid-Atlantic Regional Probability and Statistics Day Meeting, JHU/APL, Laurel, Md. (24 Oct 1992):

Chin, D. C., "Performance of Several Stochastic Approximation Algorithms in the Multivariate Kiefer–Wolfowitz Setting."

Maryak, J. L., and Spall, J. C., "Bayesian Estimation of a Function of a Parameter from Non-i.i.d. Data with Applications to Quantile (CEP) Estimation."

Spall, J. C., "An Introduction to Neural Networks and Their Application to Control."

Spall, J. C., Silberman, G. L., and Maryak, J. L., "Confidence Bounds for the Estimation Error in Adaptive Kalman-Type Filters."

The following papers were presented at the 1992 Int. Mentor Users' Group, Portland, Ore. (26–28 Oct 1992):

Cardone, W. M., "AWG-Based Wire Model for Analog Simulation."

DeMatt, N. W., "LMS and a Technology Independent Library."

Dozsa, J. R., "OrCAD and Mentor Integration."

The following papers were presented at the Technology 2002 3rd National Technology Transfer Conf., Baltimore, Md. (1-3 Dec 1992):

Olsen, D. F., Harris, J. C., Cutchis P. N., and Cristion, J. A., "Automatic Detection of Seizures with Applications."

Roberts, J. C., Ecker, J. A., and Biermann, P. J. "The Design of Mechanically Compatible Fasteners for Human Mandible Reconstruction."

Spall, J. C., and Cristion, J. A., "Control of Complex Systems by Neural Networks."

The following papers were presented at the 4th NASA Symp. on VLSI Design, Coeur d'Alene, Idaho (29-30 Oct 1992):

Kinnison, J. D., "Single Event Phenomena: Testing and Prediction."

McKerracher, P. L., Cain, R. P., Green, W. S., Barnett, J. C., and Kinnison, J. D., "Design and Test of Field Programmable Gate Arrays in Space Applications."

McKnight, T. R., Rodriguez, D. E., Barnett, J. C., and Valverde, C. R., "System Development Using VLSI for Space Applications."

COLLOQUIA

6 Nov 1992: "Mapping Cosmic Dark Matter," J. A. Tyson, AT&T Bell Labs.

13 Nov: "The Fleet Systems Department in the New World Order," E. J. Hinman, R. L. Trapp, and L. H. Zitzman; APL.

20 Nov: "Mega-Classification of Protein Sequences," L. Hunter, National Library of Medicine.

4 Dec: "Medical Modernization in China: the Search for a Chinese Model," K.-C. Yip, University of Maryland, Baltimore County.

11 Dec: "Some Chemical Effects of Ultrasound," P. Riesz, National Cancer Institute.

18 Dec: "Some Atmospheric Optical Phenomena: Rainbows, Halos, and Glories," R. G. Greenler, University of Wisconsin-Milwaukee.

8 Jan 1993: "Controlling Cardiac Chaos," W. L. Ditto, College of Wooster.

15 Jan: "Buy the Number? A Probabilistic Analysis of the Maryland State Lottery," A. F. Karr, University of North Carolina and National Institute of Statistical Sciences.

22 Jan: "Photonics," C. K. N. Patel, AT&T Bell Labs.

29 Jan: "Giant Magneto-Transport Properties in Artificially Structured Solids," C.-L. Chien, JHU.

5 Feb: "The Biochemistry of the Visual Process," R. R. Birge, Syracuse University.

12 Feb: "The Curse of Dimensionality," H. Wozniakowski, Columbia University.

19 Feb: "The Outlook for the Space Program in the Clinton Administration," J. M. Logsdon, George Washington University.

26 Feb: "High Pressure Chemistry of Hydrogen in Metals," J. V. Badding, Pennsylvania State University.

U. S. PATENTS (1992)

B. G. Boone, O. B. Shukla, and M. D. Bulla, *Method and Apparatus for Radon Transformation and Angular Correlation in Optical Processors*, No. 5,101,270, 3 Mar:

An electro-optical apparatus for generating the radon transform and angular correlation of input images using optical signal processing techniques is disclosed. In the preferred embodiment, video feedback of raster-scanned images is utilized to perform the radon transform and angular correlation separately or in combination.

J. R. Hayes and S. C. Lee, *Stack Data Cache Having a Stack Management Hardware with Internal and External Stack Pointers and Buffers for Handling Underflow and Overflow Stack*, No. 5,107,457, 21 Apr:

A hardware cache manager controls the top-of-stack data underflow/overflow by efficiently managing overflow and underflow to and from a processor chip in such a manner that less than 1% of the processor's time is spent managing the stack cache.

A. B. Fraser, *Heated Element Velocimeter*, No. 5,117,691, 2 Jun:

A heated element sensor for detecting the flow rate or other physical characteristics of a fluid without the need to determine ambient temperature.

D. M. Rust, J. W. O'Byrne, and T. J. Harris, *Instrument for Measuring Solar Magnetic Fields*, No. 5,125,743, 30 Jun:

A solar vector magnetograph that includes a solid Fabry–Perot etalon filter that is electrically tunable for selecting and transmitting a narrow band of polarized light.

F. S. Billig, *Propellant Utilization System*, No. 5,135,184, 4 Aug:

The invention is a propellant utilization system for flight vehicles operating in both the subsonic and supersonic speed ranges. In particular, the invention uses steam and water produced in the system to replace hydrogen as a coolant and for power generation. It also provides for the utilization of oxygen obtained from air captured by the air inlet instead of oxygen stored in the vehicle.

G. B. Irani, K. T. Constantikes, and G. D. Shiflett, *Coherent Correlation Addition for Increasing Match Information in Scene Matching Navigation Systems*, No. 5,146,228, 8 Sep:

The invention correlates a sequence of sensed images with a reference map and stores the resultant correlation surfaces. The correlation surfaces are then added so that match point correlations combine coherently by superposing the individual correlation surfaces using short-term, accurate navigation data. As a result, a composite correlation surface is formed in which the values at the peak (or antipeak) position add up, and the effective match area is greatly increased. Both peaks and antipeaks are then detected to determine a match point and provide a navigation position update.

J. A. Krill, M. M. Jesurun, and W. H. Zinger, *Optimized Design for TE_{01} Mode Circular Waveguide Connected to a Bend Section*, No. 5,148,134, 15 Sep:

An optimized design for a circular overmoded waveguide, of both the dielectric lined or sheathed helix types, operating in the microwave and lower millimeter wave bands.

J. W. Warren, *Compact Bend for TE_{01} Mode Circular Overmoded Waveguide*, No. 5,151,673, 29 Sep:

A compact waveguide bend structure having high power handling capability and designed particularly for use with a TE_{01} circular overmoded waveguide.

J. L. Abita and J. G. Bebee, *Adaptable Multiport Test Fixture System*, No. 5,153,505, 6 Oct:

The system is a fixture used to support electrical circuits for testing nondestructively. It is particularly useful for physically and electrically mounting circuits that are edge accessed.

E. E. Westerfield, L. L. Warnke, and W. S. Devereux, *Variable Pulse Rate Circuit*, No. 5,157,695, 20 Oct:

A variable pulse rate circuit for correlating a locally generated code with a code that is being transmitted by a space vehicle. The space vehicle is tracked using the variable pulse rate circuit.

R. S. Potember, S. Yamaguchi, and C. A. Viands, *Electron Density Storage Device and Method Using STM*, No. 5,161,149, 3 Nov:

The invention is a method and device providing very high density information storage on an organometallic charge transfer data storage medium. The medium is switched from one state to another through the application of an electric field to the medium by the probe tip of a scanning tunneling microscope (STM), resulting in an observable change in the electron density of the surface of the medium. An STM tip is used to write, read, and erase data via the organometallic charge transfer medium (e.g., TCNQ or derivatives thereof).

P. H. Gilbert, R. G. Niemann, and R. L. Trapp, *Discrete Automatic Gain Control with High Stability, High Speed, and Low Distortion*, No. 5,161,170, 3 Nov:

High-speed automatic gain control (AGC) circuitry capable of use in pulse or CW systems; incorporates hysteresis for improving the stability and distortion characteristics of the AGC.