

## PUBLICATIONS

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## PRESENTATIONS

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- Bryden, W. A., Kistenmacher, T. J., Morgan, J. S., and Ecelberger, S. A., "Sputter Deposition of Indium Nitride on the (111) Face of Elemental and Compound Semiconductors," Fall Meeting of the Materials Research Society, Boston, Mass. (26–30 Nov 1990).
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- Chao, K., "Space Qualification Test and Evaluation of JHU/APL Custom Designed ASICs," ESA Electronic Components Conf., ESTEC, Noordwijk, The Netherlands (12–16 Nov 1990).
- Chao, K., and Wychulis, W. C., "Test and Evaluation of Digital GaAs Process Control Monitor (PCM)," 1990 GaAs Reliability Workshop, New Orleans, La. (7 Oct 1990).
- Chiu, H. Y., Kemp, B. L., and Yungkurth, C. B., "An Interdisciplinary Approach to Low Observable Aeronautic System Design," 3rd AF/NASA Symp. on Recent Advances in Multidisciplinary Analysis and Optimization, San Francisco, Calif. (24–26 Sep 1990).
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- Fristrom, R. M., Favin, S., and Linevsky, M. J. (APL), Van Tiggelen, P. (Catholic Univ., Louvain, Belgium), and Smith, O. I. (UCLA), "The Application of Zonal Flame Model to the Understanding of Chemistry," 23rd Int. Symp. on Combustion, Orleans, France (22–27 Jul 1990).
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- Kistenmacher, T. J., Bryden, W. A., Wickenden, D. K., and Ecelberger, S. A., "Substrate Dependent Texture and Heteroepitaxy for Group IIIA Nitrides by the Precession Method," Fall Meeting of the Materials Research Society, Boston, Mass. (26–30 Nov 1990).
- Krimigis, S. M., "Particles and Fields Measurements at Neptune with Voyager-2," 27th COSPAR Meeting, The Hague, The Netherlands (25 Jun–6 Jul 1990).
- Kues, H. A. (APL), and Monahan, J. C. (FDA), "A Hypothetical Basis for Microwave-Induced Ocular Hazards (Melanin/Free Radicals)," USSR/USA Workshop on Physical and Environmental Factors, Kiev, USSR (23 Sep–8 Oct 1989).
- Lange, D. G., Phelan, A. M., and Fredricks, C. (JHMI), Kues, H. A. (APL), and Quock, R. M. (JHMI), "Acute Low Dose Microwave Irradiation Alters Methyl-naltrexone Potency in Mice," Society for Neuroscience, New Orleans, La. (Nov 1987).
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- Maurer, R. H., Chao, K., and Nhan, E., "Recent Life Test Results on GaAs HEMTs," 1990 GaAs Reliability Workshop, New Orleans, La. (7 Oct 1990).
- Moorjani, K., "High Transition Temperature Superconductivity," NAVSEA, Crystal City, Va. (4 Oct 1990).
- Morgan, J. S., "Properties of Sputtered Thin Films of AlN and InN," 5th Annual Review of the Center for Nondestructive Evaluation, Baltimore, Md. (17–18 Mar 1990).
- Morgan, J. S., Bryden, W. A., and Kistenmacher, T. J. (APL), and Poehler, T. O. (JHU), "Characterization of Mobility Degradation Mechanisms in Indium Nitride," 1989 March Meeting of the American Physical Society, St. Louis, Mo. (20–24 Mar 1989).
- Morgan, J. S., Bryden, W. A., and Satkiewicz, F. G., "Study of the Isotope Effect in  $\text{YBa}_2\text{Cu}_3\text{O}_7$ ," March Meeting of the American Physical Society, New Orleans, La. (Mar 1988).
- Newman, R. W., and Resch, C. L. (APL), Williams, G. S., (Atlantic Res. Corp.), and Dykstra, J. E. (Thiokol Corp.), "AFLAS: An External Insulation for Rocket Motors," 1990 JANNAF Propulsion Meeting, Anaheim, Calif. (Oct 1990).
- Parker, J. G., "Factors of Importance in the Generation of Singlet Oxygen during Photodynamic Treatment of Tumors," SPIE Biomedical Optics '90 Conf., Los Angeles, Calif. (14–19 Jan 1990).
- Schuster, P. R., Viands, C. A., and Potember, R. S., "Nonlinear Optical Response in Suspensions of Organic and Inorganic Colloidal Systems," OptCon '90 Annual Meeting of the Optical Society of America, Boston, Mass. (4–9 Nov 1990).
- Schuster, P. R., Viands, C. A., and Potember, R. S., "Nonlinear Optical Response of Colloidal Suspensions," East Coast Symp. on Chemistry and Physics of Clusters and Cluster Ions, Dept. of Chemistry, JHU, Baltimore, Md. (15 Jan 1991).
- Shuster, M. D., "Tutorial on Attitude Determination," Saturday Seminar, Microcosm, Inc., Torrance, Calif. (21 Apr 1990).
- Shuster, M. D., "Kalman Filtering for Attitude Determination," Seminar, EDO Corp., Barnes Eng. Div., Shelton, Conn. (7 May 1990).
- Shuster, M. D., "A la recherche d'une meilleure attitude: un voyage mal organisé," Seminar, Aérospatiale, S.A., Cannes, France (2 Jul 1990).
- Shuster, M. D., "Succès et malheurs dans l'estimation des alignements," Seminar, Aérospatiale, S. A., Cannes, France (3 Jul 1990).
- Shuster, M. D., "QUEST, a longa história de um algoritmo rápido," 1st Brazilian Symp. on Aerospace Technology, São José dos Campos (SP), Brazil (Aug 1990).
- Shuster, M. D., "Estimação dos alinhamentos," Seminar, Instituto de Pesquisas Espaciais, São José dos Campos (SP), Brazil (3 Sep 1990).
- Shuster, M. D., "In Quest of a Better Attitude: A Misguided Tour," AIAA/NCS Guidance, Navigation and Control Lecture, Greenbelt, Md. (23 Oct 1990).
- Silver, D. M. (APL), Collier, Z. T. (JHMI), Farrell, R. A. (APL), Grebe, R. (JHMI), Hart, R. W. (APL), Hopkins, S. D., and Langham, M. E. (JHMI), O'Brien, V. (APL), and Schilder, P. (JHMI), "Pulsatile Ocular Blood Flow in Humans and Rabbits," 9th Int. Congress of Eye Research, Helsinki, Finland (29 Jul–4 Aug 1990).
- Silver, D. M., and Ehrlich, L. M., "Electromagnetic Wave Scattering from Periodic Surfaces," 5th Int. Conf. on Science and Engineering on Supercomputers, London, England (22–24 Oct 1990).
- Spicer, J. W. M., "Thermal Techniques for Nondestructive Evaluation," American Society for Metals, Baltimore, Md. (21 Nov 1989).
- Spicer, J. W. M., Kerns, W. D., Aamodt, L. C., and Murphy, J. C., "Determination of Degree of Thermal Barrier Coating Disbonding by Time-Resolved Infrared Radiometry (TRIR)," Review of Progress in Quantitative NDE, La Jolla, Calif. (15–20 Jul 1990).
- Srinivasan, R., "New Advances in the Detection Methods of Underground Corrosion," 1989 NACE National Regional Conf., Baltimore, Md. (20–22 Sep 1989).
- Starcken, G. M., "Digital Coding of Passive Sonar Signals for Auditory Presentation," Sonar Signal Processing Workshop (12–13 Mar 1990).
- Vetter, J. R. (APL), and Cain, J. D., Banks, W., and Kyle, D. (Western Atlas Int.), "Very Long Range Precision GPS Network Using Multi-Day Orbital Adjustment," 2nd Int. Symp. on Precise Positioning with the Global Positioning System, Ottawa, Canada (3–7 Sep 1990).
- Waddell, R. L., "The Midcourse Space Experiment: A Case Study in Computing Architectures for Spacecraft Systems," Annual Review of the Illinois Computing Laboratory of Aerospace Systems and Software, University of Illinois at Urbana-Champaign (19–20 Nov 1990).

The following papers were presented at the 10th Annual Meeting, Bioelectromagnetics Society, Tucson, Ariz. (18–22 Jun 1989):

- Kues, H. A., and McLeod, D. S. (APL), D'Anna, S. A., and Lutty, G. A. (JHMI), and Gambrell, C., and Elson, E. C. (U.S. Army), "Ocular Changes Following Exposure to High-Peak Pulsed 1.25 GHz Microwaves." Kues, H. A., and McLeod, D. S. (APL), Lutty, G. A., and D'Anna, S. A. (JHMI), and Monahan, J. C. (FDA), "Pulsed Microwave-Induced Ocular Pathology in Non-Human Primates." Kues, H. A. (APL), and Monahan, J. C. (FDA), "Microwave-Melanin Interactions: A Hypothetical Basis for Ocular Damage."

The following papers were presented at the AGU Fall Meeting, San Francisco, Calif. (2–5 Dec 1990):

- Carbary, J. F., Darlington, H., Hansen, S., Heferman, K., Mayr, M., Meng, C.-I., Paxton, L., and Peacock, K., "UVISI: Ultraviolet/Visible Imaging and Spectrographic Imaging Experiment." Williams, D. J., "Theory and Data Products from the First GEM Campaign." Williams, D. J., McEntire, R. W., Jaskulek, S., Krimigis, S. M., Roelof, E. C., and Tossman, B. (APL), Wilken, B., and Studemann, W. (Max Planck Institut für Aeronomie), Armstrong, T. P. (Univ. Kansas), Fritz, T. A. (Los Alamos National Lab.), Lanzerotti, L. J. (Bell Lab.), and Roederer, J. G. (Univ. Alaska), "Galileo Energetic Particle Detector and Early Results."

## COLLOQUIA

- 7 Dec 1990—"The Quantum Zeno Effect," W. M. Itano, National Institute of Standards and Technology.
- 14 Dec—"Developments in Laser Trapping and Cooling," C. E. Wieman, JILA and University of Colorado.
- 4 Jan 1991—"Molecular Mechanisms for Radiation Metabolism in Tumor Cells," R. R. Weichselbaum, University of Chicago.
- 18 Jan—"Fractal Electrodynamics," D. L. Jaggar, University of Pennsylvania.
- 25 Jan—"Speech Processing by Real and Silicon Ears," M. H. Goldstein, The Johns Hopkins University.
- 1 Feb—"Treatment of Cancer with Radiolabeled Antibodies," J. R. Williams, The Johns Hopkins University.
- 8 Feb—"Optical Computation Using SEEDS (Self-Electro-optic Effect Devices)," M. Prise, AT&T Bell Laboratories.
- 15 Feb—"Toxins and Health: Science vs. Perception," R. E. Gots, National Medical Advisory Service.
- 22 Feb—"Optics with Two-Dimensional Electrons," H. L. Stormer, AT&T Bell Laboratories.
- 1 Mar—"The Neurobiology of Alzheimer's Disease and Animal Models: Mechanisms of Disease and Prospects for Therapy," D. L. Price, The Johns Hopkins University.
- 8 Mar—"Quantum Semiconductor Nanostructures: Physics and Applications," M. A. Reed, Yale University.
- 19 Mar—"The Hopkins Ultraviolet Telescope: An Odyssey in Space and Time," S. T. Durran and A. F. Davidsen, Center for Astrophysical Sciences of The Johns Hopkins University.
- 22 Mar—"Ecological Economics," R. Constanza, University of Maryland Chesapeake Biological Laboratory.
- 29 Mar—"C<sub>60</sub>: Chapter Two," R. E. Smalley, Rice University.

## U.S. PATENTS (1990)

- J. Bohandy, B. F. Kim, T. E. Phillips, F. J. Adrian, and K. Moorjani, *Method for Detection of Weak Links in the Current Path of Electrically Continuous Superconductors*, No. 4,904,929, 27 Feb:

Detection of weak links in electrically continuous superconductors by observing the ef-

fect of magnetic field modulation on the dc resistance of superconductors. The phase-detected response to the magnetic modulation shows a peak at  $T_c$ . The presence of a second peak at temperatures below  $T_c$  indicates the presence of weak links in the superconductor.

- A. L. Newman and W. D. Stanbro, *Phase Sensitive Differential Polarimetry Technique and Apparatus*, No. 4,912,059, 27 Mar:

A differential polarimeter for detecting the presence of an analyte by detecting changes in optical rotation. A test cell contains a fluid sample exposed to an analyte-specific enzyme, and the reference cell contains a fluid sample not exposed to the enzyme. First and second beams of polarized light pass through the test and reference cells, respectively. Analyte concentration is indicated by the relative optical rotation of the two beams.

- H. W. Ko, J. P. Skura, and H. A. C. Eaton, *Magnetoencephalograph (MEG) Using a Multi-Axis Magnetic Gradiometer for Localization and Tracking of Neuromagnetic Signals*, No. 4,913,152, 3 Apr:

An apparatus and method for the passive, non-invasive, magnetoencephalographic (MEG) localization and tracking of sources of magnetic signals in the brain. A multi-axis magnetic gradiometer is used to detect the magnetic field, field gradient, and polarization emanating from neuronal sources in the brain under either normal or pathological conditions.

- Q. E. Dolecek, *Method for Controlling Propagation of Data and Transform through Memory-Linked Wavefront Array Processor*, No. 4,922,418, 1 May:

A method for performing computations with an asynchronous linear array of multiple processing stages. The linear array comprises multiple processing stages interspersed with flow-control flag mechanisms and with dual-port linking memories. The method utilizes the flow-control flag mechanisms between processing stages to control the flow of computations through the array.

- W. D. Stanbro and A. L. Newman, *Capacitive Chemical Sensor Using an Ion Exchange Surface*, No. 4,935,207, 19 Jun:

A capacitive chemical sensor using an ion exchange layer to detect analyte ions in a liquid medium. When the layer is exposed to analyte ions, a portion of the layer ions is exchanged for analyte ions, causing a change in the dielectric constant of the liquid medium along the surface of the ion exchange layer. This change in dielectric constant produces a change in capacitance.

- R. S. Potember, K. R. Speck, and H. S. Hu, *Vanadium Dioxide Formed by the Sol-Gel Process*, No. 4,957,725, 18 Sep:

Vanadium dioxide thin films prepared from tetravalent vanadium organic compounds by using a sol-gel process. Vanadium dioxide films deposited from an alcoholic solution are annealed between 200 and 700°C under nitrogen to achieve complete dehydration and crystallization.

- W. G. James, *ECM Simulator for Missile Fire Control System Vulnerability Studies*, No. 4,969,819, 13 Nov:

An electronic countermeasure (ECM) particularly adaptable for use in missile fire control system vulnerability studies. A computer is used to control the simulation of true target radar skin return signals and ECM signals. The ECM signals are representative of those produced by attacking and standoff aircraft carrying deception and obscurity jamming.

- B. F. Kim, J. Bohandy, and F. J. Adrian, *Method and Apparatus for the Thin Film Deposition of Materials with a High Power Pulsed Laser*, No. 4,970,196, 13 Nov:

An apparatus and method for laser direct writing of materials onto a substrate by using a high-power pulsed laser. The laser direct writing is accomplished by impinging a thin film of material with a pulsed laser, causing the material to be selectively blown off an optically transparent source support substrate and deposited onto the surface of the receiving substrate.

- Q. E. Dolecek, *Address Sequence Generation by Means of Reverse Carry Addition*, No. 4,974,188, 27 Nov:

An apparatus for generating a bit-reversed sequence. The apparatus includes a reverse addition means for adding binary words in most significant to least significant bit order, with the overflow or carry bit propagated to the left. The invention is used to generate a bit-reversed address and/or an address sequence that is mapped into a "closed" space.

- R. E. Bateman, *Test Set for a Navigational Satellite Receiver*, No. 4,977,579, 11 Dec:

A test set to detect the reduced capabilities of an associated navigational satellite receiver and to isolate malfunctions therein. A digital card test section generates digital signals to test and isolate faults in four digital system cards of the satellite receiver. A satellite simulator section generates a facsimile of a navigational reference signal to test the receiver-processor section of the satellite receiver.