



The IEEE

# Newsletter

PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

## *NJ Consultants' Network:*

### **Consulting as a Business**

On Thursday evening, May 28, 1998, the IEEE Consultants' Network of Northern NJ will feature a seminar on "Consulting as a Business." The speakers include Dr. Ira J. Pitel, Wendy Vandame, and Jack Meola.

#### **About the Talk**

For active consultants and technical professionals who are considering independent consulting as an alternative or supplement to employment, CNNNJ presents a one-evening seminar to address the three principal concerns of every consultant:

- Landing good consulting assignments
- Maximizing your consulting revenue through informed pricing strategies
- Effects of recent rulings and prospective changes to the restrictive IRS Rule 1706

Following an optional *prix fixe* dinner (details below), a distinguished panel of experts will address each topic. Time will be allotted for both questioning from the floor and individual networking over coffee and refreshments.

#### **About the Speakers**

Ira J. Pitel, PhD (SM), is an eminently successful entrepreneur and outspoken advocate and visionary on technical consulting as a business. A specialist in high-power AC to DC converters, static inverters, spacecraft power supplies, and specialty lighting controls, Dr. Pitel founded, in 1981, and is president of, Magna-Power Electronics, Boonton, NJ, developers and manufacturers of power-conditioning equipment. Dr. Pitel began his engineering career at Bell Laboratories and moved to Exxon Corporation, where he managed R&D for the Cornell-Dubilier subsidiary. He received his BS from Rutgers, MS from Bucknell, and PhD from Carnegie-Mellon.

Wendy Vandame, a fixture on the NY metro area consulting and contracting scene for nearly 20 years, is an expert at pricing consulting services based on market value. The former publisher of the nationally-circulated *Consultants and Contractors Newsletter* and *Job Express*

and recently a recruiter for a local consulting services firm, she brings a unique perspective on the industry. Ms. Vandame's technical specialty is software QA and QA management. She is a graduate of the University of Bristol (U.K.) and the London School of Economics.

Jack Meola is both an attorney and a certified public accountant with an in-depth knowledge of the contentious IRS Rule 1706 and how it affects a consultant's business. A tax partner with the firm of Amper, Politziner & Mattia of Flemington, NJ, Mr. Meola has 20 years experience in public accounting, is a contributing author to *Year-End Tax Planning*, is president of the Tax Committee of the Middlesex County Bar Association, and is a member of Partnership Tax Committee of the NJ State Bar Association and the Federal Committee of the American Bar Association. He holds a JD from Seton Hall Law School and an LLM in Taxation from Villanova Law School.

#### **About the Network**

The IEEE Consultants' Network of Northern New Jersey is an educational and business resource for IEEE members in independent practice. Founded in 1992, the CNNNJ publishes an annual Consultants Directory and coordinates with other IEEE networks nationwide through the Alliance of Independent Consultants Networks (IEEE-USA).

**Reservations:** No charge to attend seminar but reservations are required for both the seminar and optional pre-seminar dinner. Dinner will be served 5:30 PM in Allie's American Grille at the Marriott and includes 1 bar drink, salad, entree, dessert, coffee, tax and tip for \$20. Call Warren Umholtz at (908) 766-7493.

**Time:** 7:30 PM, Thursday, May 28, 1998.

**Place:** Hanover Marriott Hotel, Route 10, East Hanover, NJ.

**Information:** Check web site at <http://www.hicom.net/~cnnnj> or contact R. Walker (973) 728-0344 (r.d.walker@ieee.org).

### **William Paterson University Seeks Adjuncts-Summer, Fall 1998 & Spring 1999**

Seeking instructors for advanced Continuing Education computer courses including Java, C++, Unix, NT, and scripting languages. Also seeking instructors to conduct workshops on all popular office productivity packages, basic web site design and introduction to the internet and www. Applicants must hold at least a Bachelors degree plus have at least 3 years experience in the computing industry or teaching. Resumes should clearly state industrial and academic experience and knowledge of current topics in computing. In addition, instructors are sought with at least a Masters for courses that carry University credit.

Please send letter of application, resume and 3 professional references to: Peter Shapiro, William Paterson University, Center for Continuing Education & Distance Learning (CEDL), 358 Hamburg Tpk., P.O. Box 913, Wayne, NJ 07470-0913, Phone: (973)720-2436, Fax: (973)720-2298, e-mail: shapirop@gw.wilpaterson.edu.



"MEMS - Materials and Processes" was presented by Dario Gil, a Senior at Stevens Institute of Technology

**Abstract:** The field of MEMS (MicroElectroMechanical Systems) not only requires novel devices and fabrication techniques, but also new materials not presently available. Wafer bonding is one method of building these three dimensional structures and fabricating multiple layered materials which may be invaluable for future devices. As well as providing electrical isolations, as in SOI (Silicon on Insulator), the use of multiple bonds and etches provides a method of producing high aspect ratio structures without complicated and expensive LIGA or plasma etching.

The objective of this senior design project is to characterize the bonding of various type materials in a new clean-room process. These bonded materials will form the basis for novel and future devices. If time and equipment performance permits it, preliminary tests with simple structures will be used to evaluate the bonding constraints of machined substrates with other materials. This will provide a foundation of knowledge for MEMS device fabrication by wafer bonding.

The last presentation titled "The Design of the Co-operative Education Inforserver" was given by James M Bessette, also a Senior at Stevens Institute of Technology.

**Abstract:** The Co-operative Education office's paper-based system of administration and its current applications are inadequate to handle the growing number of student and employer profiles.

The current database application system is underutilized, and was designed to be a single-user application only. In addition, security is an issue with the need to protect employer and student records from network snoops.

The office wishes to move from an underutilized peer-to-peer network to a client/server-based model that will serve and protect their files, printers and current database system. In conjunction with this network upgrade, they want to standardize the software loadsets across the department with university approved software. In addition, the current database system needs to be replaced with a multi-user application that is compatible with the default loadset. The department will also have to be trained on how to use the new system and how to take advantage of the security.

## North Jersey Section Activities May 1998

**May 3**—"NJ Section Awards Reception"—3:00 to 5:00 PM at the Birchwood Manor, 111 North Jefferson Road, Whippany, NJ. Anne Giedlinski (973) 377-3175.

**May 4**—"Provisioning Quality of Service in Next-generation ATM Switches"—NJ Communications Chapter, 5:30 PM (pizza and pop 5:00 PM), NJIT, 202 ECE Center, Newark, NJ. Hongya Ge (973) 642-4990 or Nirwan Ansari (973) 596-3670 (ang@megahertz.njit.edu). Please check <http://megahertz.njit.edu/~ieeenj/comm.html> for latest updates.

**May 5**—"The Challenge of Satellite Communication Analysis in the 21st Century"—MTT/S/AP-S Chapter, 6:30 PM, NJIT, Room 202, ECE Building, Newark, NJ. Dr. Edip Niver (973) 596-3542 (NJIT), Willie Schmidt (973) 492-0371, or Dr. Chandra Gupta (973) 633-4469 (GEC-Marconi).

**May 5**—"Wireless Geolocation Systems and Services"—NJ Chapter VTS, 7:00 PM, KDI Triangle Electronics, 60 South Jefferson Rd, Whippany, NJ. Mel Lewis (914) 964-3820 (m.lewis@ieee.org) or Art Greenberg (973) 492-1207 (a.h.greenberg@ieee.org).

**May 6**—"NJ Section Executive Committee Meeting"—7:00 PM, ITT, 100 Kingsland Road, Clifton, NJ. Keith Saracinello (973) 515-8829 or k.saracinello@ieee.org.

**May 20**—"Restructuring of the PJM Power Pool"—NJ IAS/PES Chapters, 5:00 PM, PSE&G, 80 Park Plaza, Newark, NJ. Ken Oexle (973) 386-1156 or Tom Piascik (973) 430-6692

**May 28**—"Consulting as a Business"—NJ Consultants' Network, 7:30 PM, Hanover Marriot Hotel, Route 10, East Hanover, NJ. Check web site at <http://www.hicom.net/~cnnn> or contact R. Walker (973) 728-0344 (r.d.walker@ieee.org).

### Upcoming Meetings

**June 3**—"NJ Section Executive Committee Meeting"—7:00 PM, ITT, 100 Kingsland Road, Clifton, NJ. Keith Saracinello (973) 515-8829 or k.saracinello@ieee.org.

**Jun. 16-Jul. 28**—"Visual Basic 5.0"—North Jersey Section, Tuesday and Thursday Evenings, 6:30-9:00PM, location to be determined. Dr. Fred Chichester (973) 744-3065 (leave message) or Art Greenberg (973) 492-1207 (for course content questions only).

## Members and Non-Members Welcome PLEASE POST

# 1998 IEEE NORTH JERSEY FELLOWS

## Dr. Louis J. Lanzerotti

*"For outstanding contributions to geophysics, space plasma physics, planetary magnetospheres, and energetic solar particles"*

Louis J. Lanzerotti is a Distinguished Member of Technical Staff at Bell Laboratories, Lucent technologies, where he has been employed since 1965. He has served as an Adjunct Professor of Electrical Engineering at the University of Florida and also as a Regents' Lecturer at UCLA. He has an engineering degree from the University of Illinois and MA and PhD degrees in physics from Harvard.

His principal research interests include space plasmas, geophysics, and engineering problems related to the impact of space processes on space and terrestrial technologies. He has been, and is, a co-investigator and principal investigator on several NASA missions, including IMP4,5, Voyager 1,2, Galileo Orbiter and Probe, Ulysses, and Cassini. He has also conducted extensive ground-based and laboratory research on space-related topics and in geophysics, especially geomagnetism. His work has often involved close collaborations with both ground and space segments of long haul telecommunications. He has published over 450 science and engineering papers, and is co-author and co-editor of three books.

Lanzerotti was Chairman (1984-88) of

NASA's Space and Earth Science Advisory Committee, a member of the 1990 Vice-Presidential Advisory Committee on the Future of the US Space Program, and a member of the 1993-94 Presidential Committee on the redesign of the space station. He has also served two terms as Chairman (1988-94) of the Space Studies Board of the National Research Council (NRC) and was a member (1991-93) of the Vice President's Space Policy Advisory Board. He served eight years (1982-90) as a member of the Polar Research Board of the NRC, and two years as a member of the Advisory Board for the National Science Foundation (NSF) Division (now Office) of Polar Programs. He Chaired (1992-93) an NRC Committee that formulated environmental policy advice for Antarctic research. He is presently a member of the NRC Ocean Studies Board, the Chair of the NRC Technical Advisory Board for the Army Research Laboratory, a member of the Governing Board of the American Institute of Physics, and a member of the Committee on Public Affairs (COPA) of the American Geophysical Union and of the Panel on Public Affairs (POPA) of the American Physical Society. He has served on numerous other NASA, NSF, and university advisory and review bodies concerned with space and geophysics research. He has testified in Congress on numerous occasions on space and geophysics issues. Elected to the National Academy of Engineering and the International Academy of Astronautics, he is also a Fellow of the American Institute of Aeronautics and Astronautics, the American Geophysical Union, the American Physical Society, and the American Association for the Advancement of Science. Mr. Lanzerotti has received NASA's Distinguished Scientific Achievement Medal and has twice (1988, 1994) received NASA's Distinguished Public Service Medal. Minor Planet 5504 Lanzerotti recognizes his space and planetary research. Mount Lanzerotti (74.83 S, 70.55 W) recognizes his research in the Antarctic.

Lanzerotti has been active in local community public affairs, serving three elected terms on the Board of Education (1982-1990), five years of which were as Vice President. He presently is in his second term as an elected member of his Town Council.

## Dr. Young-Kai Chen

*"For contributions to ultra-short pulse generation using semiconductor lasers, integrated laser-modulators, and high frequency InP HBTs"*

Young-Kai Chen received his BSEE from National Chiao Tung University, Hsinchu, Taiwan, and the MSEE from Syracuse University, Syracuse, New York, and the PhD degree from Cornell University, Ithaca, New York, in 1988. From 1980 to 1985, he was a Member of Technical Staff in the Electronics Laboratory of General Electric Company, Syracuse, New York, working on the design of silicon and GaAs MMICs for phase array applications. Since February 1988, he has been with Bell Laboratories, Murray Hill, New Jersey as a Member of Technical Staff. Since 1994, he has been the Department Head of High Speed Electronics Research. Dr. Chen is also an adjunct associated professor at Columbia University. His research interest is in high speed semiconductor devices and circuits for wireless and fiber optic communications. Dr. Chen has contributed to more than 80 technical papers and nine patents in the field of high frequency electronics and semiconductor lasers. He is a Fellow of IEEE and members of American Physics Society and Optical Society of America.

## **Dr. Mark Richard Pinto**

*"For contributions to computer-aided design of electronic devices"*

Mark R. Pinto received BS degrees in electrical engineering and computer science from Rensselaer Polytechnic Institute, and the MS and PhD degrees in electrical engineering from Stanford University. As part of his doctoral work, he developed the widely-used semiconductor device simulation program PISCES-II.

In 1985 he joined Bell Laboratories, now part of Lucent Technologies, as a full time Member of Technical Staff where he conducted a research program in semiconductor physics and technology, centered in numerical simulation and device research. His research contributions in semiconductor CAD include development of general purpose three-dimensional modeling tools; mathematical algorithms for curve tracing, adaptive grid generation, nonlinear solvers, and noise analysis; and models for hot carrier transport, semiconductor contacts, organic transistors and optoelectronic systems. He has also been actively involved in device research, including R&D into advanced MOS and BiCMOS structures, scaled low voltage nonvolatile memory, CMOS latchup, Si/SiGe and III-V heterostructures, and quantum and hot carrier functional devices. He is the principal author of Bell Labs device simulator, PADRE.

Dr. Pinto has held a variety of other R&D assignments at Bell Labs and is currently Chief Technical Officer and Vice President of Lucent Technologies

Microelectronics Group, which designs and manufactures integrated circuits and optoelectronic components for the computer and communications industries. He was a recipient of the Bell Laboratories Distinguished Member of Technical Staff Award in 1991 and was appointed a Bell Laboratories Fellow in 1995. He was elected to membership in Tau Beta Pi and Eta Kappa Nu.

## **Jay G. Wilpon**

*"For leadership in the development of automatic speech recognition algorithms"*

Jay G. Wilpon is Division Manager of the Speech Processing Software and Technology Research Department within AT&T Laboratories. Since joining AT&T in June 1977, Mr. Wilpon has concentrated his research on problems in automatic speech recognition. He has over 90 publications and has been awarded nine patents. Mr. Wilpon is the co-editor of the book: *Voice Communication Between Humans and Machines*, published by the National Academy of Sciences Press.

Mr. Wilpon's current research interests include several key problems that will promote the ubiquitous use of speech recognition technology within the telecommunications industry. The focus of his work is on (1) robust speech recognition algorithms and (2) spoken language understanding and dialogue control with emphasis on their application to support new innovation service user interfaces, such as voice controlled intelligent personal agents.

He has served as Chair of the IEEE Signal Processing Society's (SPS) Speech Processing Technical Committee from 1993 through 1995 and is currently an elected member of the IEEE SPS Board of Governors. In 1987, Mr. Wilpon received the IEEE Acoustics, Speech, and Signal Processing Society's Paper Award for his work on clustering algorithms used in training automatic speech recognition systems.

## **Fred L. Katzmann**

*"For leadership and innovation in developing a new generation of cost-effective precision instrumentation"*

Fred Katzmann is one of a very select group of pioneering entrepreneurial engineers who built the electronics instrumentation business in the post-war era. As president of Ballantine Laboratories, he led in the development of low-cost precision instruments. He

provided precision instruments both for government and commercial use.

His inventions and papers applicable to precision voltage transfers led to AC and DC voltage measuring probes and instruments. Prior to this, AC measurements were inaccurate and slow. His company developed AC/DC transfer voltage standards, voltage calibrators, calibration systems, digital voltmeters and temperature measuring devices.

He has also done considerable development in the early history of oscilloscopes, and other measuring devices. Mr. Katzmann has 14 patents on oscilloscopes, decibel meters, transfer standards, and voltage measuring devices in addition to several design patents on new cases for DMM's. He has lectured extensively, including lecture visits to Beijing, Sydney, New Delhi, London and many locations in the U.S.

As member of the IEEE Instrument and Measurement Society Technical and Administrative Committees, Mr. Katzmann served as General Chair of the Society's ITMC 1992 Conference. He also served on the Department of Defense – Fluke Committee for Electronic Instruments Procurement and was a member of the National Bureau of Standards Review Committee. Mr. Katzmann is a licensed Professional Engineer and he was active in local municipal government in Cedar Grove.

## *Vehicular Technology Society:* **Wireless Geolocation Systems and Services**

The IEEE North Jersey Chapter of the Vehicular Technology Society will host a talk by Dr. Sirin Tekinay on May 5, 1998. The topic will be "Wireless Geolocation Systems and Services."

### **About the Talk**

Wireless communication systems, mobile cellular and PCS alike, now face the responsibility to locate emergency callers as specified in the recent FCC ruling and return the location information to public safety answering points (PSAPs). While the FCC ruling is the major driver for wireless providers to offer location capability, location services other than 911 emergency calls are emerging as potential value added services and network management aids. Examples are prioritized differently by different network operators; nevertheless, they range from zone based billing to mobile yellow pages, roadside assistance to fleet management. Geolocation technology is a broad topic that has been established and progressed in its own right. Radar technology, the Global Positioning System (GPS), and other examples are in place. Making a wireless communication system provide location services is a nontrivial task. The mobile phone is not a device that was designed to be "locatable." There are numerous other challenges at every layer of the wireless communication network that need to be overcome. Some solutions involve overlaying the communication system with a location system, while others suggest integrated configurations or modifications to the mobile terminals.

### **About the Speaker**

Dr. Tekinay completed her PhD in electrical engineering with a dissertation on wireless telecommunication networks at the School of Information Technology and Engineering, George Mason University, Virginia, in 1994. From 1994 to 1996, she worked at the Wireless Systems Engineering Group of Nortel (then BNR), as a senior member of scientific staff. Dr. Tekinay served as the project leader in various wireless product and network planning activities, and lots of research efforts including university collaborated projects. In 1996, she joined the Wireless Technology Laboratory of the Bell Labs, Lucent Technologies as the technical prime on wireless geolocation systems. She did research on CDMA systems, GPS, and position location as a PCS and multimedia application. She joined the academia at NJIT, Dept of ECE, NJ Center for Multimedia Research

in September 1997. She is a member of the Editorial Board of the IEEE Communications Magazine, IEEE Vehicular Technology Society, IEEE Communications Society, Eta Kappa Nu, and the New York Academy of Sciences.

### **All Welcome!**

You need not be an IEEE member to attend. There is no charge for admission and registration is not necessary. Light refreshments will be provided.

**Time:** 7:00 PM, Tuesday, May 5, 1998.

**Place:** KDI Triangle Electronics, 60 South Jefferson Rd, Whippany, NJ.

**Information:** Mel Lewis (914) 964-3820 (m.lewis@ieee.org) or Art Greenberg (973) 492-1207 (a.h.greenberg@ieee.org).

### *NJ PES/IAS:*

## **Restructuring of the PJM Power Pool**

The May 20, 1998 meeting of the NJ Section Power Engineering and Industrial Applications Society will present a program on "Restructuring of the PJM Power Pool." The speaker will be Laura Manz.

### **About the Talk**

Across the nation change is sweeping the electric utility industry. PJM (Pennsylvania, NJ, Maryland Power Pool) is on the cutting edge of addressing the issues of ISO (independent system operator) formation and transmission constraint. FERC Commissioner Hoecker recently stated - "We have seen the future and it is PJM". Laura Manz will present an overview of reformulating the largest power pool in the nation. Topics will include:

- Background of PJM
- Restructuring process
- The new PJM organization
- Key features of the restructured PJM
- Next steps

### **About the Speaker**

Laura Manz is Principal Engineer for the Transmission Planning and Services Department at Public Service Electric and Gas Company. For the past year Ms. Manz has been closely involved in many aspects of restructuring the PJM Pool to accommodate wholesale and retail competition. Ms. Manz has been working with the Supporting PJM Companies to establish the rules for an open spot market, locational pricing for settlements and congestion, ancillary services markets and financial transaction rights. She was instrumental in developing and gaining FERC approval of the Supporting Companies' proposals for LMP and congestion pricing for the PJM Pool.

Ms. Manz has a degree in electrical

engineering from Lafayette College and a MBA from Drexel University. She has been with PSE&G since 1982.

**Time:** 5:00 PM, Wed., May 20, 1998.

**Place:** PSE&G, 80 Park Plaza, Newark, NJ.

**Information:** Ken Oexle (973) 386-1156 or Tom Piascik (973) 430-6692.

### *NJ MTT/AP Chapter:*

## **The Challenge of Satellite Communication Analysis in the 21<sup>st</sup> Century**

The topic at the May 5th, 1998 meeting of the MTT/S/AP-S Chapter will be "The Challenge of Satellite Communication Analysis in the 21st Century." The speaker will be Tom Johnson.

### **About the Talk**

The new satellite communication systems that are currently being developed face some unique challenges. There is a significant shift away from the traditional geo-stationary orbits (GEOs) toward the low and mid earth orbits (LEOs and MEOs). Higher frequency bands such as Ku, Ka, and EHF are also being used, each with their own problems. The advantages and disadvantages of these decisions will be discussed along with example satellite systems (IRIDIUM, TELEDISIC, ACES). A brief demonstration of the capabilities of Satellite Tool Kit (STK) will follow the formal presentation.

### **About the Speaker**

Tom Johnson (Member, IEEE) is currently the Development Lead at Analytical Graphics, Inc. (creator of STK and its related add-on modules). He has spent the past 2 years developing satellite system and communication analysis tools at Analytical Graphics. Prior to that he was with Lockheed Martin Astro Space and the US Air Force as an altitude control system engineer specializing in satellite operations and flight-software design. He holds an BSEE ('89) from the University of Notre Dame and an MSEE ('93) from the University of Colorado.

### **All Welcome!**

You do not have to be an IEEE member to attend. Free refreshments will be served at 6:00 PM.

**Time:** 6:30 PM, Tuesday, May 5, 1998.

**Place:** NJIT, Room 202, ECE Building, Newark, NJ.

**Reservations/Information:** Dr. Edip Niver (973) 596-3542 (NJIT), Willie Schmidt (973) 492-0371, or Dr. Chandra Gupta (973) 633-4469 (GEC-Marconi).

## IEEE AWARDS RECEPTION

*North Jersey Section  
May 3, 1998  
Birchwood Manor, Whippany NJ*

*A time to relax, unwind and enjoy --  
A time to pay tribute to our new Fellows --  
A time to honor our Award Winners --  
YES it's time for the Annual Section Reception*

The Annual Section IEEE Awards Reception will be held at the Birchwood Manor, 111 North Jefferson Road, Whippany again this year. The affair is scheduled for **Sunday, May 3, 1998** from 3 to 5 PM. Tickets are \$35.00 each and include a complete prepaid, two-hour open bar, hors d'oeuvres, buffet, and dessert. Spouses and guests are welcome. We are limited to 90 attendees, so please make your reservations early.

**Reservations are required by April 28, 1998.** Complete the reservation form and return it with your payment. If you would like tickets mailed back to you, please enclose a self-addressed **stamped** envelope. Otherwise, your tickets will be held at the door for you. If any additional information is required concerning the reception, contact Anne Giedlinski at (973) 377-3175.

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Use this form for Reception reservations. **ENCLOSE A SELF-ADDRESSED STAMPED ENVELOPE to receive tickets in advance.** **Reservations are required by April 28, 1998.**  
Mail reservation request to:

Anne Giedlinski  
299 Brooklake Road  
Florham Park, NJ 07932

Enclosed is \_\_\_\_\_ for \_\_\_\_\_ ticket(s) at \$35.00 each (make check payable to **North Jersey Section IEEE**) for:

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

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