The IEEE
Newsletter

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

Metro EMBS:
Medical Applications Of Excimer Lasers

On January 13, 1993 the IEEE Metropolitan Sections Engineering in Medicine and Biology Society will present "Medical Applications Of Excimer Lasers And Dependence Of Excimer Laser Beam Properties On Laser Gas Composition." The speaker at this meeting will be Dr. Robert E. Turner.

About The Talk

Several new applications of excimer (high energy UV) lasers in industry and medicine have increased the requirements for control of excimer laser beam parameters. Medical uses include the use of excimer lasers in opthalmic applications such as "corneal sculpting" and coronary laser angioplasty. Some applications require precise control of spatial uniformity, pulse-to-pulse amplitude variations and temporal profiles. The spatial and temporal characteristics of excimer gas laser beams are affected by small changes in laser gas composition. The role of gas compositions, as well as methods for controlling gas compositions, will be discussed in relation to critical beam parameters. The medical applications will also be discussed.

About The Speaker

Dr. Turner is the founder and President of Applied Photonics, Inc., a manufacturing company specializing in laser gas systems. He received his PhD in Chemical physics from Yale University and holds six U.S. Patents relating to gas laser systems.

Optional Pre-Meeting Get-Together

Optional informal pre-meeting get-together 6:30 to 7:30 PM in the cafeteria snack area (enter Tower, turn left).

Time: 7:30 PM (6:30 PM pre-meeting get-together) Wednesday, January 13, 1992.
Place: Rockefeller University, Tower Bldg., Room 305, 1200 York Ave., NYC. Entrance gate 66th Street. Free Parking.
Further Information: Joel Levitt (718) 891-6460; Sol Manber (516) 585-8200; John Frederick (212) 595-2599; Edna Feher (212) 757-0610;

GEORGE GRAUL
1923-1992
See "Tribute To A 'Dinosaur' " p8

North Jersey Section PACE:
Effects Of Computer System Redundancy On Reliability

The January 13, 1993, meeting of the North Jersey Section's Professional Activities Committee for Engineers will present a talk on "Effects Of Computer System Redundancy On Reliability." The speaker will be Dr. Michael Liechenstein.

About The Talk

Increasingly, computer-based information and decision support systems are becoming key factors of production. This is especially the case in developed nations, not only in governmental and commercial contexts, but even on a personal usage basis. As the role of these systems becomes more dominant, so will dependence on them, and hence, concerns about their reliability. Such critical dependency already abounds, and is readily apparent in contexts such as air traffic control, telephone switching networks, power distribution, criminal justice, health care facilities, financial markets, etc.

Dr. Liechenstein will present both a static and dynamic model of mission reliability as a function of back-up or redundancy level for such critical computer-based systems (both in monitored and unmonitored operation). As will be shown, the resultant reliability is critically dependent on redundancy level, as well as the relative failure rates of the system components. The talk will examine the numerous practical implications of the findings and should be of interest to anyone involved in achieving cost-effective, reliable designs.

About The Speaker

Dr. Liechenstein currently serves as Chairman of the IEEE's North Jersey Section and also chairs its Systems, Man & Cybernetics Society. Following his graduation from M.I.T. and Yale, he served as a member of the technical staff at AT&T's Bell Laboratories and as a research director at The RAND Corporation. As president of Integrated Technology Services Corporation and faculty member in the Department of Quantitative Analysis of St. John's University, Dr. Liechenstein has consulted worldwide to numerous governmental and commercial organizations and has over one hundred technical publications. He is currently a senior member of IEEE.

Time:
7:30 PM, Wednesday, January 13, 1993.
Place:
GEC-Marconi, 150 Parish Drive (Plant 18), Wayne, N.J.
Further Information:
Robert Sinusas (201) 228-3941.

Resolve To Advance To A Higher Grade

If you are an Associate Member, you may be qualified for Member or Senior Member grade

If your grade is Member, you may have the qualifications for Senior Member.

For information and an application contact Don Weinstein, Kulite Semiconductor, One Willow Tree Road, Leonia, N.J. 07605-2239, (201) 461-0900, ext. 3106.

JANUARY, 1993
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NEWSLETTER STAFF
Editor ..... M.M. Perugini
Business Manager ..... A.M. Beattie

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(908) 981-0060
It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

***The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings are open to all members. Information on* meeting agenda is available from Art Greenberg, Section Secretary at 785-7547.**

Elected Section Officers are listed above.

CHAIRMAN'S CORNER

Well, it's been an exciting year! I am proud that our Section has made some progress in the direction of financial stability. I hope that we continue with our various money-raising activities, including Symposia, shows, education activities, etc. It is important that we cooperate with our neighboring Sections in various joint activities. In union there is strength. Again, my thanks for all of your help and ideas through this hectic year.
Dr. Richard V. Snyder, 1992 Chairman

NY/LI PES & IAS
The Cable Coroner

The Power Engineering Society and Industry Applications Society New York & Long Island Chapter will meet on January 27, 1993 to hear a talk entitled "The Cable Coroner." The speaker will be Jack Mulligan, P.E. The meeting will take place at the Con Edison Building Auditorium on 14th Street & Irving Place, NYC 5:50-7:30 PM.

This talk focuses on cable failures and failure prevention. Drawing on over 30 years of experience, Mr. Mulligan, specializing in cable and joint "autopsies", will illustrate a variety of sample cable failures and highlight his discussion with methods for tracking down the specific underlying cause of individual cable and joint failures.

For additional information please contact M.C. Reed - TDG member and Committee Sponsor at (212) 796-2488 or J.D. Connors - TDG Chairman at (212) 943-2828. Refreshments provided.

NY-Consultants' Network:
Consultants On Consultants

The January 18, 1993 meeting of the IEEE New York Consultants' Network, will focus on several of our members reviewing their consulting practices during the past year. They will especially focus on the impact they see of the recent elections and the ongoing current recession on their activities, and how they envision prospects for 1993.

Join us for this illuminating and candid look back and forwards.

Date: 6:00 PM, Monday, January 18, 1993.
Place: Con Edison, 16th Floor Press Rm., 14th Street, and Irving Place, NYC (one block east of Union Square). On street parking after 6:00 PM.
Further Information: Jim Wetterau (212) 321-1999; Hulan Jack (212) 206-3049.

IEEE DESK NAMEPLATES

The North Jersey Section of the IEEE is making desk nameplates available to all our members. These attractive engraved nameplates have an IEEE logo and your name on a two inch high blue panel mounted in a gold colored base.

The 8 inch long nameplate can have up to 15 characters and costs $12.75. The 10 inch long nameplate can have up to 21 characters and costs $14.90. These prices include the New Jersey Sales tax and mailing cost.

Fill out the form below or a copy of it and send it with a check payable to: "North Jersey Section, IEEE." Mail to the address below.

Remember, the nameplate may have up to 15 to 21 characters including punctuations and spaces. Please type or print your name as you would like it to appear on the nameplate.

If you have any questions, call (201) 461-0900 during working hours or (201) 797-4366 in the evening.

To: Don Weinstein, 30-18 Grunstra Place, Fair Lawn, NJ 07410

Text for Nameplate

Name _____

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_____

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[ ] Enclosed is $12.75 [ ] Enclosed is $14.90

North Jersey MTT/AP:

Review Of Modern Filter Technology

On January 20, 1993 the IEEE North Jersey Section MTT/AP Chapter will present "A Review Of Modern Filter Technology." The speaker will be Dr. Richard V. Snyder of RS Microwave Co. Inc.

About The Talk

"FILTER: a device or material for suppressing or minimizing waves or oscillations of certain frequencies"...per Webster. Such a short definition to describe the myriad of techniques and tricks which pertain! All microwave components or systems exhibiting Q values of greater than 1 are in fact filter networks. Circulators, switches, mixers, amplifiers, etc. include "imbedded" matching and filtering properties which must be incorporated into the design.

At least three fundamental changes have had, are having, or very well could have significant impact on filter design and realization. These impact items are the desktop computer, active implementations of passive designs, and superconductivity. On top of these, a host of smaller developments in efficient network design (generalized cross-coupling, use of three dimensional coupled networks), dielectric resonators and materials, processing capability, machining precision, nanotechnology, surface mount technology and others have emboldened the filter designer to seek better performance, smaller size and reduced manufacturing cost. As digital circuits increase in speed and complexity, a fourth major change area is likely to impact the design of RF filters, which have traditionally been analog in implementation.

About The Speaker

Richard V. Snyder is the President and founder of RS Microwave, a well-known manufacturer of RF and Microwave filters. He is the author of numerous papers on the subject of filters and couplers and the holder of 11 patents. He was 1992 IEEE North Jersey Section Chairman and is Chapter Chairman for the MTT and AP Societies. He is a reviewer for several MTT publications, teaches various filter and network courses and serves MTT-ADCOM on special assignments.

Lunch Information

Free Refreshments or reserve box lunch ($4.00). Reservations are required,

Time: 12:00-1:00 PM, Wednesday, January 20, 1993.
Place: GE Astro, Corner of 571 and Old Trenton Road, East Windsor, N.J.
Reservations or Questions: Mary at (609) 771-2099.

North Jersey Section Activities
JANUARY

January 6, 1993--"North Jersey Section Executive Committee Meeting"-7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Rd., Totowa, N.J. Al Connelly (201) 616-0755.

Jan. 6--IEEE Metro EMBS meeting scheduled for this date has been postponed. Joel Levitt (718) 891-6460.

Jan. 13--"Effects Of Computer System Redundancy On Reliability"--North Jersey Section PACE, 7:30 PM, GEC-Marconi, 150 Parish Drive (Plant 18), Wayne, N.J. Robert Sinusas (201) 228-3941.

Jan. 13--"Medical Applications Of Excimer Lasers"--IEEE Metro EMBS, 7:30 PM, Rockefeller University, Tower Bldg., Rm. 305, 1200 York Ave., NYC. Joel Levitt (718) 891-6460.

Jan. 18--"Consultants On Consultants"--IEEE NY Consultants' Network, 6:00 PM, Con Edison, 16th Floor Press Rm., 14th Street and Irving Place, NYC. Jim Wetterau (212) 321-1999.

Jan. 20--"Review Of Modern Filter Technology"--IEEE North Jersey Section MTT/AP Chapter, 12:00-1:00 PM, GE Astro, Corner of 571 and Old Trenton Road, East Windsor, N.J. Mary (609) 771-2099.

Jan. 27--"Optoelectronics Technology From Lab To Market"--North Jersey Computer/Communication/LEO Chapter, 7:30 PM, AT&T Bell Labs, Room 6B101, Mountain Avenue, Murray Hill, N.J. Debbie Steinhauser (201) 694-6734.

Jan. 27--"The Cable Coroner"--PES/IAS NY/LI Chapter, 5:50-7:30 PM, Con Edison Bldg., Auditorium, 14th St & Irving Place, NYC. M.C. Reed (212) 796-2488.

Jan. 28--"Consultants To Share Experiences"--Northern NJ IEEE Consultants' Network, 7:30 PM, GEC-Marconi Facility, 150 Parish Drive, Wayne, N.J. Jim Boyd (201) 584-0329.

Jan. 28--"Application Of A Nonlinear, Flexible Pointing System Test Fixture To The Design Of Control Systems"--IEEE Control Systems Society, 7:30 PM, John Howard Room, Hazell Student Center, NJIT, 323 Dr. Martin Luther King, Jr. Blvd., Newark, N.J. Tim Chang (201) 596-3519.

Upcoming Meetings

February 3, 1993 --"Very Long Distance Optical Communications—First Session In 1993 Optoelectronic Seminar Series"-- NJIT, Center for Microwave and Lightwave Engineering, North Jersey Section IEEE & NJIT Graduate Student Assoc., Dr. Whitman (201) 596-5709/3232.

Feb. 16--"PC Networking Basics"--IEEE NY Consultants' Network, 6:00 PM, Con Edison, 14th Street & Irving Place, NYC. Jim Wetterau, (212) 321-1999.

March 1--"Orthopaedic Prostheses 1993: Biomechanical Principles For Design Of Implants"--Metro EMBS & NY Academy of Medicine. Joel Levitt (718) 891-6460.

Mar. 2-April 27 & March 4-April 29--"Seminar On "C" Programming"--North Jersey Section, JCP&L, 300 Madison Ave., Morristown, N.J. John Baka (201) 455-8534.

Mar. 10--"1993 Optoelectronic Seminar Series—Optics In Computing"-NJIT, Center for Microwave and Lightwave Engineering, North Jersey Section IEEE & NJIT Graduate Student Assoc., Dr. Whitman (201) 596-5709/3232.

May 18-20--"1993 Vehicular Technology Conference"--Vehicular Technology Society, Meadowlands Hilton, Secaucus, N.J. George Graul (908) 290-1128.

Members and Non-Members Welcome
PLEASE POST

NJ Comp/Comm/LEO Soc:

Optoelectronics Technology From Lab To Market

On January 27, 1993, the North Jersey Computer/Communication/LEO Chapter will present a talk on "Moving Optoelectronics Technology From The Lab To The Market." The speaker will be Dr. Gregory H. Olsen, President of Sensors Unlimited, Inc.

About The Talk

The history of EPITAXX—an optoelectronic devices firm spun off from the RCA David Sarnoff Research Center In 1984—will be reviewed from start-up to acquisition. Topics covered will include business plans, venture capital , key employees, and R&D funding. Mistakes, pitfalls, and successes will all be included. Key issues include the environment of a small vs. large company and product quality. Resources to help start companies and the financial climate for the 1990's will be discussed and a question and answer period will follow.

About The Speaker

Dr. Gregory Olsen was co-founder, president and CEO of EPITAXX, Inc., a high-technology company in Princeton, N.J., which produces optoelectronic devices for fiber optic and near infrared application. He brought the company from a five-man start-up to a profitable, self-sustaining enterprise with annual revenues in excess of five million dollars, which was then acquired by Nippon Sheet Glass in 1990. He founded Sensors Unlimited in 1991 to exploit recent advances in III-V materials technology for near infrared instrumentation and imaging applications.

Dr. Olsen is active in many technical societies, including the Electronic Materials Committee, the American Physical Society, the Electrochemical Society, IEEE CLEO and Optical Fiber Conference (OFC), and the IEEE Electro '85, '87 and '89. He has delivered numerous invited lectures on his research at international conferences, has written more than 70 papers in these areas, and has coauthored several books on crystal growth and semiconductor devices. Dr. Olsen holds ten U.S. patents. He received RCA Laboratories Outstanding Achievement Awards in 1978 and 1980, and in 1980 was appointed a Research leader in the Optoelectronics Group

All Welcome

You do not need to be an IEEE member to attend. Come and bring your friends.

Time: 7:30 PM, Wednesday, January 27, 1993.
Place: AT&T Bell Labs, Room 6B101, Mountain Ave., Murray Hill, N.J.
Information/Directions
Debbie Steinhauser (201) 694-6734.

No. NJ Consultants' Network:

Consultants To Share Experiences

At the January 28, 1993 meeting of the Northern N.J. IEEE Consultants' Network, six members will share their technical skills business approach to their activities as well as their future expectations.

This presentation will give to all the members in the group a better insight of the available skills and thus facilitate the networking and task sharing between members.

About The Consultants' Network

The IEEE Consultants' Network of Northern NJ was founded in April 1992 to encourage and promote the use of independent technical consultants by business and industry. Meetings are held on the last Thursday of each month at GEC-Marconi. The Network also plans to publish and distribute a Directory of Consultants in January 1993. For information on how to reserve your FREE copy contact Alex Richardson (201) 992-0448.

Time: 7:30 PM, Thursday, January 28, 1993.
Place: GEC-Marconi Facility, 150 Parish Drive, Wayne, NJ. (Directions: From Intersection of Rte. 23 and Rte. 46, approx 1 mile east to Riverview Drive. North on Riverview for 1.5 miles to traffic light at golf course. Go straight on Valley Road to next light; turn left onto Parish Drive. Follow to "T"; left turn for 2 short blocks to Dey Rd. Left on Dey Rd. GEC entrance approx. 100 ft. on right side.
Information: Jim Boyd (201) 584-0329.

Job Lead Hints

Here are a few leads that may be useful:

Professional Engineering Employment Registry (PEER II) is an IEEE exclusive national employment registry that matches jobs to submitted resumes. Get up to four job matches per year on diskettes if unemployed. Cost is $15.00 per year. For a PEER II application call (202) 785-0017

Company job number with voice response unit for selected job descriptions. RAM MOBILE: (800) DIAL-RAM.

Jobs are available for C programmers with 4 years experience on either VAX/VMS or UNIX operating systems. Call George Trimble at (609) 924-1192.

If you have additional leads you would like to share, contact: Howard Leach (201) 540-1283.

No. Jersey-Control Sys. Soc.:

Nonlinear Testing For Control Systems Design

On January 28, 1993, the North Jersey Section IEEE Control Systems Society will present a talk on "Application Of A Nonlinear, Flexible Pointing System Test Fixture To The Design Of Control Systems." The speaker will be Michael S. Mattice of the Automation and Robotics Team at Picatinny Arsenal.

About The Talk

In support of the United States Army's commitment to sponsoring basic and applied research in many areas of control system design the Automation and Robotics Team at Picatinny Arsenal has constructed and developed a mathematical model for a nonlinear, flexible pointing system test fixture. This test fixture is used to evaluate the effectiveness of basic research conducted to solve representative control problems encountered in military applications and to demonstrate the technology to potential users. The nonlinear model of this system will be presented along with various controllers designed using this fixture.

About The Speaker

Michael S. Mattice is an electronics engineer at the United States Army's Armament Research, Development and Engineering Center at Picatinny Arsenal, Dover, N.J. He has worked in the Automation and Robotics Team there since 1985. He received his BSEE from Michigan Technological University in 1985 and his MSEE from the Polytechnic University in 1988. Currently, he is studying toward a PhD in mechanical engineering at the State University of New York at Stony Brook. The focus of his work has been the utilization of the results of basic research obtained by university investigators in military control applications.

Members and guests interested in the meeting topic are invited.

Free Pre-Meeting Buffet

Reservations are required for the pre-meeting buffet which starts at 6:00 PM followed by the meeting at 7:30 PM.

Time: 7:30 PM, Thursday, January 28, 1993.
Place: John Howard Room, second floor of the Hazell Student Center, New Jersey Institute of Technology, 323 Dr. Martin Luther King, Jr. Blvd., Newark, N.J.
Reservations/Information: Tim Chang (201) 596-3519; Fred Chichester (201) 744-7340.

Professional Activities Committees for Engineers NEWS

The following articles are reprinted from the December 1992 issue of IEEE IMPACT and reflects unemployment concerns across the nation.

ST. LOUIS MEMBERS WORRIED ABOUT ENGINEERING UNEMPLOYMENT

By James V. Leonard, Director, Region 5

The third and final of IEEE-USA's Member Forums for 1992 was held on October 24 in St. Louis, Missouri. IEEE President Merrill W. Buckley, Jr., told the audience that the engineering profession is suffering from unemployment levels among the highest ever recorded. He announced that IEEE is trying to help its members through jobs fairs and employment seminars and is also addressing this problem through its Technology Policy Council and U.S. Competitiveness Committee. 1992 IEEE President-Elect Martha Sloan emphasized that Member Forums were developed to enable members to communicate their concerns directly to IEEE's volunteer leaders.

Dr. James Hahn, St. Louis Section Chairman, reported that lack of jobs for engineers is the overriding problem in the St. Louis Section and that unemployment is of great concern to its members. The primary defense contractor in St. Louis has laid off more than 10,000 workers. The telephone company is moving its headquarters to San Antonio. Hahn challenged IEEE-USA to help defense contractors convert to civilian activities.

The unemployment problem has also created secondary problems, such as early retirement, pension considerations, and health care. Local member Jerry Herman asked what IEEE-USA was doing about portable pensions. USAB Chairman Arvid G. Larson reviewed the status of the two portable pension bills that will be reintroduced in 1993 in the U.S. House of Representatives and in the Senate. He expects other professional groups to support this legislation.

I reminded Forum attendees that a letter-writing campaign is a very effective tool for promoting legislation. Attendee Carla Scruggs asked IEEE-USA to send Legislative Alerts to more members, possibly through electronic bulletin boards. IEEE General Manager John Powers explained that IEEE is improving its electronic communications capabilities.

Local member Joseph Farrier asked about access to Medicare supplement insurance; he cannot buy a policy because he lives in Missouri. Powers responded that IEEE had 12 or 13 types of insurance programs in its portfolio and that each one must be approved in each of the 50 states. He believes that Medicare supplement insurance is available in all states but will seek clarification from IEEE's Individual Member Benefits and Services Committee. Member Activities Council Chairman David Roberson added that IEEE-USA favors short-term insurance for unemployed members, but costs are an obstacle when coverage for pre-existing conditions is a requirement.

Commenting on the declining student enrollment in EE programs, forum participant Jody Sullivan, professor of electrical engineering at Washington University, inquired what IEEE was doing about it. Sloan told the audience that IEEE still wants to attract the best and brightest students but doesn't want to encourage enrollments when engineering employment opportunities are declining.

Another St. Louis Section member, Chris Nelson, is working in the defense industry and wanted to know how IEEE can help him redirect his career. I announced that the St. Louis Section had scheduled an employment seminar for that day and invited all local members to attend.

Noting an increase in women engineers, Carla Scruggs asked what IEEE is doing to help female members who took family leave and wish to re-enter the work force. Sloan explained the IEEE supports the ***Family Leave Act***. She also suggested that members use IEEE's technical publications, take home-study courses, and attend IEEE employment seminars.

At the forum's conclusion, members continued informal discussions with IEEE leaders, commenting that this kind of exchange made them feel as if individual members' concerns really can be heard.

ENGINEERING EMPLOYMENT MALAISE TO CONTINUE

by Frank E. Lord, Editor, Career Activities Council

This forecast is the ninth in a series of quarterly engineering employment forecasts produced by Robert A. Rivers. Each quarter, he refigures projections for the next seven quarters. Although the latest unemployment figures appear to be somewhat better than those reported last quarter, Rivers sees many negatives indicating that engineers are far from the end of the engineering employment malaise.

Rivers reported that actual engineering unemployment for the third quarter was down slightly to 3.5 percent—approximately 64,000 engineers—18,000 of whom are from electrical, electronics, and computer engineering fields. He predicts that 25,000 more defense workers will lose their jobs by the year's end. Independent data on declining employment levels is confirming the high levels of unemployment in Rivers' forecasts. He reminds us that his previous figures have indicated that the actual number of displaced engineers is at least twice the number of unemployed engineers reported by the Bureau of Labor Statistics.

As reported in the September issue of *Impact*, the accuracy of Rivers' projections has been deteriorating. He attributes this decline to overzealous regulators and a failing banking system with weakened reserves.

Consequently, Rivers now reports only actuals, while continuing work on an improved forecasting model. The table reflects this change by showing forecasts only four quarters into the future.

Rivers' Engineering Unemployment Forecast

		Engineering Unemployment Percent	
Year	Quarter	Forecast	Actual*
1989	4	1.49	1.3
1990	1	1.48	2.0
	2	1.53	2.1
	3	1.84	1.9
	4	2.18	2.2
1991	1	2.22	2.6
	2	2.23	2.4
	3	2.20	2.1
	4	2.08	2.5
1992	1	2.21	4.2
	2	2.12	3.9
	3	2.06	3.5
	4	1.67	
1993	1	1.51	
	2	1.45	
	3	1.26	

* from Bureau of Labor Statistics (BLS) data

NOTE: Transition engineering unemployment rate at times of full engineering employment = 0.3 to 0.4 percent

THE NEW JERSEY INSTITUTE OF TECHNOLOGY

1993 Optoelectronics Seminar Series and Industry Show

sponsored by
The Center for Microwave and Lightwave Engineering
North Jersey Section IEEE & NJIT Graduate Student Association

Planning Committee
M. Ettenberg, DSRC; E. Gordon, NJIT; H. Grebel, NJIT; W. Kosonocky, NJIT;
R. Leheny, Bellcore; T. Li, AT&T; Richard Linke, NEC-Res. Inst; S. Nagel, AT&T;
E. Niver, NJIT; I. Reingold, Geo-Centers; G. Whitman, NJIT; J. Yardley, Allied Signal.

I. VERY LONG DISTANCE OPTICAL COMMUNICATIONS

February 3, 1993, Wednesday, 3-5 pm, Room 1400, Guttenberg Information Technologies Center

Undersea Lightwave Systems

Peter K. Runge, AT&T Bell Laboratories

Ultra Long Distance Transmission Using Erbium-Fiber Amplifiers and Solitons

Linn F. Mollenauer, AT&T Bell Laboratories

II. OPTICS IN COMPUTING

March 10, 1993, Wednesday, 3-5 pm, Alumni Center

Smart Pixels for Optical Interconnections and Processors

Stephen R. Forrest, Department of Electrical Engineering, Princeton University

Optoelectronic Technology for Computer Interconnections

Donald J. Chanin, David Sarnoff Research Center

Optoelectronics Industry Show 2-6 pm, Alumni Center

III. IMAGING SYSTEMS

April 21, 1993, Wednesday, 3-5 pm, Alumni Center

From Telephone to Tele-Presence

Kicha Ganapathy, AT&T Bell Laboratories

High Definition Display Systems

M. Robert Miller, U.S. Army Electronics Technology and Devices Laboratory

Location: Guttenberg ITC 2/3/93, Alumni Center 3/10/93 and 4/21/93, NJIT, Newark, NJ

Registration: By mail, telephone or in-person. Those who register in advance will be sent a map. There is no registration fee. Refreshments will be served.

Directions: Garden State Parkway to Exit 145, Route 280 East; take King Blvd. Exit 14A and turn right at the traffic light. Continue straight and after three traffic lights, turn right onto Central Avenue. Take the first left, Summit Street, into campus. Proceed to the guardhouse, the attendant will direct you to reserved parking.

From Route 280 West; take the King Blvd Exit, make a left at the foot of the ramp, go one block and make a left at the stop sign onto King Blvd. After four traffic lights, turn right onto Central Avenue. Follow directions above.

For Information: Contact Dr. Gerald Whitman (201) 596-5709/3232

'93 Optoelectronics Seminar, February 3

I. Very Long Distance Optical Communications

Undersea Lightwave Systems

Peter K. Runge
AT&T Bell Laboratories

Abstract: Digital undersea lightwave systems have been in service since 1988 across the Atlantic Ocean, and since 1989 across the Pacific Ocean. These high capacity communications systems have revolutionized international communications with respect to available system capacity and service quality. The presentation will address the technological improvements that were achieved with this first generation of undersea lightwave systems operating at 280 Mb/s per fiber pair and utlizing the 1.3μm transmission window in single mode optical fibers. The newest generation undersea lightwave system utilizes the more advanced 1.55μm tranmission window and doubles the transmission capacity to 560 Mb/s per fiber pair. We will describe the technological advancements that made this increase possible. Presently, we are working on a third generation of undersea lightwave system technology which will utilize the revolutionary optical amplifier technology and operate at 5 Gb/s per fiber pair. These systems are expected to be ready for service beginning in 1995. We will describe this new system technology and the various improvements that were made to accomplish the unprecedented increase in capacity.

Ultra Long Distance Transmission Using Erbium-Fiber Amplifiers And Solitons

Linn F. Mollenauer,
AT&T Bell Laboratories

Abstract: Ultra long distance fiber optic transmission systems using inexpensive, broadband, erbium-fiber optical amplifiers to replace expensive, rate limiting, electronic regenerators are now under development. The highest bit rates are obtained in such an all-optical system by using the special, non-dispersive pulses known as solitons. Indeed, we have demonstrated error free (measured bit error rate $< 10^{-10}$) soliton transmission over paths greater than 15,000 km at 5 Gbit/s, and the same over more than 12,000 km at 10 Gbit/s. The latter result, based on a two channel (2 x 5 Gbit/s) wavelength division multiplexing, is possible because solitons of different optical frequencies (unlike other pulses) are transparent to each other. As promising as it is, however, this result represents only the beginning: single-channel bit rates (for the trans-oceanic paths) are soon expected to reach, or even to exceed, 20 Gbit/s, while remaining fully compatible with extensive WDM.

IEEE North Jersey Section Seminar "C Programming"

Tuesdays, March 2 - April 27, 1993 & Thursdays March 4 - April 29, 1993 6:30-9:00 PM
Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.

The North Jersey Section is offering an evening course entitled "C Programming." In a field where everything changes, C endures as one of the most widely used programming languages because it is powerful, efficient, portable and permissive. This course will cover C from beginning to relatively advanced and will also emphasize C's philosophy or world view. Because the course will be based on ANSI C and because there are C compilers for most computers, the expertise will be applicable from PC through mainframe.

The course will also emphasize those aspects of C that carry over and become the basis of C++. Thus the course will be useful on its own and also be a preliminary to a C++ course planned for the following semester.

The topics listed below will be covered. The Tuesday instructor is Dr. Edward (Ted) Byrne owner of a software consultant business, Flatland Computer Specialities, Inc. The Thursday instructor is Mr. Donald Hsu, President, United Societies of Engineering and Science of New Jersey.

(1) - One pre-lecture about digital computers and programming in general.

(2) - Overview of C course: Philosophy of C vs other languages (ongoing), ANSI vs older C, Nature and constituents of a simple C program, C program examples (ongoing). Variables: Reserved words, Variables, declaration and definition, Parameters (variable constants).

(3) - Loops and Conditions: Compound statements, Relational operators, Looping (iteration): for, while, do, Conditionals: if, if else, else, Autoincrementing, precedence, Statement labels, goto.

(4) - Standard and Record I/O: Output to screen: printf, format, input from keyboard: scanf, format. Filing handling, Record output, Record input.

(5) - Subfunctions and arguments: names, arguments, retum value, More on Variables: static, extern, local, auto. Main program arguments, Exit, Return levels.

(6) - Text and Libraries: Character data type, String data type, Characteristics of strings. Libraries: #include statement, library files, Common functions, #define, #ifdef, Conditional assignment.

(7) - Groups of similar and dissimilar data items and Debugging: arrays, structures, indexing, struct, item. Introduction to Industrial Strength C. Concept of levels of debugging, Assert, lint, Case tools.

(8) - Pointers: Concept of a pointer, Pointer (and other) arithmetic, Unions and Enums, Casts, Typedefs, Bit variables and operators.

(9) - Switch statement: Statement label, Case, Default, Break, State machine programs.

Class Size will be limited to a maximum of 25 with a minimum registration of 15. Early registration is recommended. Phone Reservations will **not** be accepted. Reservations accepted after February 11, 1993 will require an additional **late fee** of $25. No reservations will be accepted after February 18, 1993.

Where: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.
When: Nine sessions, Tuesday and Thursday evenings, starting March 2, 1993 from 6:30 PM to 9:00 PM.
Cost: With Text Books and QuickC compiler, IEEE Members $255; non-IEEE Members $325.
With Text Books only, IEEE Members $180; Non-IEEE Members $250.
Contact: Mr. John A. Baka at (201) 455-8534 (Business)

Registration "C Programming"

To: Mr. John Baka, Distribution Engineering, JCP&L Company, 300 Madison Avenue, Morristown, NJ 07962-1911

Name_____ IEEE No. ____

Course Choice: Tuesday Evening_____ Thursday Evening_____

Affiliation_____ Phone No. _____

Address_____

_____

Check if QuickC Compiler is needed or not Yes [ ] No [ ] Enclose required fee made payable to **"North Jersey Section IEEE"**

Signature_____

GEORGE GRAUL: 1923-1992
Tribute To A "Dinosaur"

Well, the facts are simple! George Graul is presently telling St. Peter about the advantages of IEEE membership...including upgrading. The IEEE, the North Jersey Section, his friends and I, personally, have lost an essentially irreplaceable resource....a "resource" whom we were proud to call "friend."

George died suddenly on December 16, 1992. He is survived by his wife Theresa, a son and daughter, four grandsons and one granddaughter. He is also survived by a very large extended IEEE "family." George was born and educated in Jersey City. He had been a police officer. He served in the Navy during WWII and Korea. He was an active ham operator, member of the Radio Club of America, Chairman of more IEEE groups than would fit on this page, active in lodges, family activities, Conferences, computer bulletin boards, etc., etc., etc. Those are the simple facts. They really don't tell about the empty spot in our lives left by his passing, and they don't tell us where to get the five (minimum) people it will take to do some of his IEEE jobs.

George was unique. You might not agree with him more than 50% of the time, but you liked him 100% of the time. George had energy. George had enthusiasm. George got the job done! George held every office in our Section. George held more offices, for more organizations, than most of us would care to contemplate. In fact, he wrote the job descriptions for most of them. George led by example. Never leave for tomorrow what could be done today...or yesterday...that was his approach. They don't make "dinosaurs" like the George Graul-a-saurus anymore. At the height of the December 11 "storm of the century" (coincidentally George's birthday), he headed for New York for a meeting. The only thing that kept him from getting there was the fact that he could not get his favorite parking spot near the bus. When Theresa heard him coming back in, she was happy (the storm, remember?) until he started grousing that "other people made it, even from Connecticut." So, he spent his time on the phone, on the computer and on the go...making arrangements for the major Vehicular Technology Conference (Spring, 1993) being run in our Section. That's George. Rough edges, irascible, heart of gold. I would argue with his methods, but not ever doubt that he had the best interests of our profession as his motivation. George could tell a joke, but he also told it "like it is." He is the one who has led the way towards financial stability for our section. He is the one who has led the North Jersey Section into prominence in professional issues, including employment, money-making conferences etc. George led from the front, pulling the team forward, not pushing from the rear. He was always visible and audible. I know that he'll still be thinking about us and putting in a good word "upstairs" for the IEEE. We will never forget him!

Dick Snyder
For the North Jersey EXCOM