

RockIEEE Overlook

Newsletter of



**The Institute of Electrical and Electronics Engineers
Denver Section**

January 1991

January Denver Section Meeting and Installation of Officers

On Wednesday, January 16, 1991, the IEEE Denver Section will hold its first meeting of the new year. An awards ceremony will be held recognizing the 1990 Section Executive Board, Executive Committee Chairmen, and the 1990-91 Society Chapter Chairmen. All past Section officers are especially invited to attend.

A program will follow the awards ceremony which begins at 8:00 p.m.

Speaker

Ken Janusz, United Engineers, Stearns Roger Division

"Computer Aided Engineering: More Than Just Graphics"

This is a dinner meeting which will be held at Writers Manor, 1730 S. Colorado Blvd.

Social
Cash Bar, 6-7 p.m.

Dinner
\$14.00, 7-8 p.m.

Meeting
8p.m.

Reservations for dinner must be made by 1 p.m., January 14. Please call Anita Wanberg, 220-8042 for reservations. Guests are always welcome.

THANK-YOU to John Tierney at Public Service Company of Colorado for his effort in working with the Denver Section membership database.

Society Chapter Meetings and Information

Front Range Software Quality Committee

Friday, January 11, 1991

Storage Tek
Louisville, Colorado
2:00 - 4:00 p.m.

Speakers

Terry Wertz and Carol Goetz
Members of the Product Quality Group
Auto-trol Technology

Workshop

"Requirements for a S/W Defect & Enhancement Tracking System"

They will be sharing a set of requirements and want active participation of group members to add/change those requirements.

Please call Rick Karcich, 673-6223 for information.

Joint PES/IAS

Power Engineering/Industry Applications

Thursday, January 17, 1991
Brooklyn's Saloon and Restaurant, 572-3999
2644 W. Colfax, Denver (under the viaduct)

6:00 p.m. Social
7:00 p.m. Dinner (optional @ \$10)
8:00 p.m. Meeting

Speakers

Bill Smith, Associate Director of Aviation
City and County of Denver
&
Jeff Sellon, Project Manager
Behrent Engineering

"Status Report on the New Denver International Airport"

Bill Smith will give us an update on the status of the new airport, including discussion of the initial airport configuration, magnitude of construction effort, people mover systems, baggage conveying systems and the controversial fabric roof. Jeff Sellon will discuss the proposed electric distribution system for the new airport, including discussion of FAA electrical system reliability criteria.

Please contact Barbara at Peterson Company, 388-6322, by Monday, January 14, 1990.

1st Meeting of the Denver Power Electronics Chapter

Thursday, January 24, 1991

University of Colorado School of Engineering
Boulder, Colorado
7:00 p.m.

Speaker

Dr. Robert Erickson

"Power Factor Correction"

Please call Clyde Manning, 682-6492, for the room number and other information.

Joint AP/MTT/GRS Antennas and Propagation, Microwave Theory and Techniques, Geoscience and Remote Sensing

Thursday, January 17, 1991

National Institute of Standards and Technology
325 Broadway, Boulder, Room 1103
4:00 - 5:00 p.m.

Speaker

Zoya Basta Popovic
Department of Electrical and Computer Engineering
University of Colorado, Boulder

"Grid Oscillators"

In the microwave and millimeter-wave frequency range, solid-state oscillators have limited output power levels. The alternative high-power sources are tubes, which are expensive, bulky, have a limited lifetime and require high-voltage power supplies. Combining a large number of low-power solid-state negative resistance devices becomes attractive. A coherent oscillator that can combine thousands of solid-state devices is presented. In this approach, the active devices load a two-dimensional metal grid that radiates, and the power combining is done in free space. A 100-MESFET hybrid grid oscillator locks at 5 GHz with an ERP of 24 Watts and a conversion efficiency of 20%. An equivalent embedding circuit for the devices in the grid predicts the oscillation frequency. The devices in the grid self-lock with no external locking signal present, but the grid can also be externally injection-locked. The grid oscillator is a planar structure suitable for wafer-scale monolithic integration.

No reservations are required. Please call Katie MacReynolds at 497-3471 for information.

Joint CS/IT Computer Society/Information Theory Society

Thursday, January 17, 1991

University of Colorado, Boulder
Engineering Center Classroom CR1-9
7:00 p.m.

(CR1-9 is on the south side of the Engineering Center on the south-entry level. Parking is available in the lot east of the Engineering Center).

Speaker

Dr. William Waite
Professor of Electrical and Computer Engineering
University of Colorado, Boulder

Dr. Waite has taught at universities in Australia and Germany, and lectured at several of the advanced courses given by the European Economic community. In 1973-74 he was ACM National Lecturer, and he has been Editor of the *Operating Systems Review* since 1972. His major research interests are the design and translation of programming languages, and he was Chairman of IFIP Working Group 2.4 (systems Implementation Languages) from 1983 to 1990. Dr. Waite has written numerous technical articles and three books, the most recent of which is *Compiler Construction*, co-authored with Gerhard Goos.

"How to Automate the Solution of a Complex Problem"

Problem solving involves understanding the problem, having an idea, showing that the idea solves the problem, and then implementing the idea. This process can be automated when we can understand the problem by recognizing it as an instance of a previously-solved problem. If the previously-solved problem is one that must be decomposed into a number of other problems, successful automation must overcome some significant barriers. We have developed a flexible, powerful approach to such automation tasks. Eli, a system that constructs complete compilers from specifications, has been used as a vehicle for demonstrating this technology. This talk explores the barriers to successful automation of complex problem solutions, and shows how Eli surmounts them.

Please call (voice mail) Bryce Chapman at 673-4762 or Rory Laiho at 924-7534 for reservations.

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Chairman's Message

by Gary Petersen

Happy New Year!! As we begin a new year it is worth taking a minute to review the status of the Denver Section.

The Denver Section reached its 75th anniversary during 1990, and was honored for this achievement at the IEEE Sections Congress in Toronto. Section membership now exceeds 5,000 members, including 600 student members at eight universities. We have 13 active Chapters representing 17 technical societies. The Denver Section will have a 1991 operating budget of approximately \$25,000.

In 1991 the Section will continue to support technical and professional growth through society meetings, conferences, tutorials, pre-college and college student programs and liaison with local industry.

I challenge all Denver Section members to recognize the benefits to be realized from active IEEE participation. Volunteer assistance and meeting attendance benefit your professional development and the Section becomes even stronger. Do your career a favor -- get involved!! Call me or any of the Executive Board if you'd like to help.

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College of Denver, P.O. Box 173362, Denver CO 80217-3362

Continuing Education

Persons engaged in Electrical Engineering find that the practice takes them to the boundaries of their experience and education. Many would like to expand those boundaries, in areas they may not have had a previous opportunity to study or in fields where the body of knowledge is increasing each year.

Continuing Education is available from many sources. Equipment vendors offer presentations which are an hour to a day in length. Colleges and universities offer courses in the day, evening, by mail, or by video tape. They may be in the traditional format with several hours per week of instruction for a semester or eight-hours a day for several days to a week. Many companies with expertise gained from practice in research in a particular field offer continuing education courses of one to five days in duration.

The joint PES/IAS Society Chapter in Denver has offered tutorials for several years. Past subjects have included "Industrial Power Systems", "Symmetrical Components", "Transformers", "Induction Motors", and "Personal Protective Grounding". This year the Chapter has scheduled two 4-hour tutorials. The tentative schedule is listed below. Look for details on registration on the enclosed flyer.

Friday, February 9, 1991

8:00 a.m. - Noon

Location

USBR Research & Laboratory Building
Bldg. #56, Room #2770
Denver Federal Center, Lakewood, CO

Topic

"Analysis of System Harmonics Due to Adjustable Speed Motor Drives"

Speaker

Malin Jacobs
U.S. Bureau of Reclamation

Friday, April 5, 1991

8:00 a.m. - Noon

Location

Public Service Company Training Center
38th Ave.
Denver, CO

Topic

"Fundamentals of Relay Protection"

Speaker

William Roemish
University of Colorado at Denver

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Business card ads must be actual business cards. All other ads should be provided in camera-ready format or additional set-up charges may apply. Inserts must be provided (quantity approx. 4025) and delivered to the printer.

Deadlines

February 1991 Newsletter - January 7, 1991

March 1991 Newsletter - February 4, 1991

April 1991 Newsletter - March 6, 1991

May 1991 Newsletter - April 5, 1991

Please make checks payable to Denver Section IEEE. Send business card or ad copy and check to:
Anita Wanberg, dba Trade Services, P.O. Box 4056, Englewood CO 80155-4056, (303) 220-8042.

CU-Denver Using Hi-Tech Delivery Systems for Electrical Power Short Course

The University of Colorado at Denver has taken another step forward in its presentation of one-day short courses on selected topics in electrical power systems, machines, and energy. On December 7, 1990, the CU-Denver Division of Extended Studies, working in conjunction with the Department of Electrical Engineering and Computer Science, conducted a course on "Fundamentals of Power Systems Design" in two locations at one time using the University's fiber optic cable network.

Dr. Pankaj K. Sen, P.E., and Dr. William R. Roemish, P.E., physically presented the course in a video classroom on the CU-Denver (Auraria) campus while a simultaneous, fully-interactive session was being hosted by the Division of Continuing Education on the University of Colorado at Colorado Springs (UCCS) campus. With the two-way audio/video hookup, engineers participating in the Colorado Springs classroom were able to ask questions by simply raising their hands. Each Colorado Springs participant had his/her own push-button microphone which allowed him to talk directly to the instructors and interact with fellow participants in the Denver classroom.

The University is in its second year of offering these electrical power short courses, and participants have come from as far away as Rapid City, South Dakota, and Mills (north of Casper), Wyoming. Topics that are being considered for the late spring/early summer include harmonics, lighting design, branch circuits, and electrical systems design for buildings. Future plans include taking the short courses on-site to large employers, either in-person or by broadcast using the University's short wave (ITFS) system. The December 7th "Fundamentals" course is also available on video tape.

Arne Arnesen, Director of Corporate Programs
CU-Denver Division of Extended Studies

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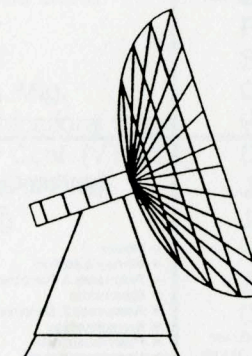
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New Denver Section Policy Statement

It is the desire of the IEEE Denver Section that all meetings and functions be held in handicap accessible locations.

IEEE PES/IAS 1990/1991 Tentative Meeting Schedule

February 21, 1991

"Sidney Back-To-Back DC Converter Station"

March 21, 1991

"Geomagnetic Induced Currents"

April 18, 1991

IEEE Denver Section All Chapters Meeting
Topic to be announced

May 16, 1991

Tour of New Public Service Co. of Colorado "Gas Insulated Substation" in Downtown Denver

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A Darwinian Creation of Software

by Rick Karcich

Earlier this year the New York Times published an article describing a fledgling science that creates software whose behavior mimics that of living creatures. The science is known as "artificial life" and has been an active research field for only about three years. Its practitioners have produced computer programs that can actually evolve into more powerful programs through their own interaction and merging to create a new generation - a Darwinian process similar to that of biological organisms. Could this have implications for the creation of fault-tolerant software?

Artificial life is similar to artificial intelligence. However, artificial intelligence strives to create systems that mimic the way the human brain works, while artificial life starts at a lower but still prodigiously complex level - simulating the life of organisms as simple as bacteria. Life at this level is characterized by a self-organizing and adaptive behavior. Does such behavior serve to make life tolerant either of insults inflicted on it by its environment or of faults inherent in its genetic makeup? If our software could take the place of these living organisms could we use knowledge of this behavior to make our software more robust?

If researchers can determine how and why certain fea-

tures and behaviors develop during evolution, then they can evolve software that is especially well suited to certain tasks, simplifying software development. Artificial life also lends itself to the creation of extremely complex software for such applications as advanced robotics.

The Front Range Software Quality Committee would like your response to some of the questions raised in this article. Please respond to Terry Wertz at Auto-trol Technology.



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Schedule of Conferences and Meetings

September 11-12, 1990	Boulder	Symposium in Optical Fiber Meas.	Douglas Franzen	(303) 497-3346
February 3-8, 1991	Crested Butte	Aerospace Applications Conf.	Leo Mallette	(213) 334-2909
April 12-14, 1991	Laramie	Region 5 Conference	Richard Day	(714) 863-0350
April 28 - May 2, 1991	Boulder	PES Substation Com. Mtg.	Sadrul Ula	(307) 766-6268
June 23 - 27, 1991	Denver	International Communications Conf.	George Flaig	(303) 452-6111
May 11 - 13, 1992	Denver	Vehicular Technology Conf. (VTC '92)	Russ Johnson	(303) 796-9100
September 10-14, 1995	Denver	Petroleum & Chemical (PCIC)	Don Cottrell	(303) 871-3752
July, 1996	Denver	PES Summer Meeting	John Nelson	(303) 431-7895
May 1997	Denver	MTT	John Barnick	(303) 969-0391
			Hussain Haddad	(303) 460-2114
			John Dunn	(303) 449-1055
			Claude Weil	(303) 497-5305

Proposed Conferences and Meetings

IAS 1994
ACM/IEEE Design Automation 1994
PES Joint Power Generation 1994
ESMO 1996
Transmission & Distribution 1997
ITC 2000

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Centennial - Sadrul Ula, Electrical Engineering Dept., University of Wyoming, Laramie WY 82071, (307) 766-6268

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The Month at a Glance

January 11, 1991

Front Range Software Quality Meeting

January 16, 1991

Denver Section Meeting

January 17, 1991

CS/IT Meeting
APP/MTT/GRS Meeting
PES/IAS Meeting

January 24, 1991

Power Electronics Meeting

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Official Publication of the
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