Chairman's Message
by Jack Reesy

Summer is over, vacations have been taken, and of course, everyone is ready to go back to work for IEEE.

The joint PES/IAS Denver Section meeting held in the spring featured the "Walking Machine." The CSU student advisor and the students who took us through the development of the machine and gave a demonstration, have done a great job on the project, displaying innovation and engineering skills at their best.

Three years ago, the fiscal year of the Denver Section was changed to a calendar year. This summer a by-laws change was approved by the Executive Committee conforming the election of officers to the fiscal year. As a result, the Nominating Committee is submitting its slate of nominations in this issue of the Overlook. Nominations from the floor will be accepted at the October meeting, and the new officers elected at that time to take office in January.

The Denver Section sponsored the appointment of the transcontinental telegraph as an IEEE electrical engineering milestone, and our national organization designated it as such. On August 5, 1990, two plaques were dedicated and installed on the obelisk at Ft. Laramie National Historical Site in Wyoming. I had the privilege of acting as M.C. Speakers were Steve Oxley, Administrator, Public Service Commission of Wyoming; Dr. Richard Gowen, President, South Dakota School of Mines and Technology and Past President of IEEE (1984); Robert Ammon, President and CEO of Western Union; Carleton Bayless, President of IEEE; and, accepting the plaques, Gary Candelaria, Superintendent, Ft. Laramie National Historical Site. Also attending was Robert Alden, Vice President of Regional Activities, IEEE, from Ontario, Canada.

John Martin, Region 5 Director, was the individual who proposed and submitted the application for this milestone award. Committee members were John Martin, Charles Wright, and Jack Reesy of IEEE, and Bill Rosol, Executive Director, Rocky Mountain Electrical League. Our thanks also go to Phil Schaeffer, President, Cheyenne Light, Fuel and Power; Ken Beach, Professor Emeritus, University of Wyoming; and John Burns, Chief, Visitor Service, Ft. Laramie, for their assistance on this project.

Next April, the Region 5 meeting and the Student Paper Contest will be held in Laramie. Help will be needed so call Sadrul Ula at the University of Wyoming, (307) 766-6268, or Don Cottrell at the University of Denver, (303) 871-3752.

Executive Meetings will be held at 7:00 p.m., Diamond Hill Bldg. D.
Executive Board: August 29, 1990, September 26, 1990
Executive Committee: September 12, 1990

The IEEE Denver Section expresses its sincere appreciation 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

Joint AP/MTT/GRS
Antennas and Propagation, Microwave
Theory and Techniques, Geoscience and
Remote Sensing
Thursday, September 20, 1990
National Institute of Standards and Technology
325 Broadway, Boulder, Room 4020
4:00 - 5:00 p.m.

Speaker
Professor David Chang
University of Colorado, Electrical Engineering Dept.
Boulder, Colorado

"Electromagnetic Modeling of Passive Mimic
Components and Antennas"

In the design of monolithically integrated microwave
and mm-wave circuits, a major factor for causing multiple
design iterations often is not because of the statistical vari-
ation in the fabrication process, nor limitations in the active
device models, albeit they do exist, but more because of the
unknown nature of mismatch and parasitic coupling
among circuit elements. It is generally known that passive
circuit models in commercial CAD software start to
become less accurate when the operating frequency
increased to beyond 10-15 GHz, and/or when circuit ele-
ments are placed in close proximity with each other.

In this talk, a newly developed algorithm called $P$-seeded
mesh for finding the full-wave solution of a microstrip
structure of general shape, will be presented. The method
is based on solving a mixed integral equation using piece-
wise linear basis functions for rectangular and triangular
cells; however, the approximation is carried out in such a
manner that actually is equivalent to a pseudo wire mesh
structure formed by these cells. The scattering matrix of a
complex structure can then be extracted from the full-wave
solution using "de-embedding arms" which are automati-
ically attached to the microstrip structure as part of the
solution process.

The $P$-mesh code has been used to find the $S$-matrix
for structures such as double-stub and bandpass filters,
deridgitated capacitors, microstrip serpentine lines with or
without taps, closely-spaced power dividers. A new per-
turbative/iterative algorithm to reduce redundancies while
still taking parasitics into account will be discussed briefly.
Layout simulation for passive MMIC circuits at the chip level is currently being
implemented.

Reservations are not required. Please call Katie
MacReynolds at 497-3471 if you have any questions.

Reliability Society
Front Range Software Quality
Committee
Wednesday, September 19, 1990
Guaranty National Insurance
100 Inverness Terrace East
2nd F. 3:00 p.m.
(Directions by phone: 790-8200 x365)

Speaker
John Cornell
Martin Marietta Denver Aerospace
Author of "Structured Rapid Prototyping, an Evolutionary
Approach to Software Development"

"Structured Rapid Prototyping"
Reservations are not required. Please call Rick Karchich,
673-6223 if you have any questions.

EMC
Electromagnetic Compatibility
Rocky Mountain Chapter
Tuesday, October 9, 1990
National Institute of Standards and Technology
325 Broadway, Boulder, Room 1107
(Enter front of main bldg.)
7:00 p.m.

Speaker
Robert F. German
EMC Engineer
Henry Ott Consultants

"Effect of an Image Plane on Printed Circuit
Board Radiation"
For more information call:
Mark Lapach (303) 773-4628 or
Ev Evans (303) 761-9447

IEEE PES/IAS
Power Engineering/Industry Applications
Thursday, September 20, 1990
Brooklyns Saloon and Restaurant
264 W. Colfax, Denver
572-3999
6:00 p.m. Social
7:00 p.m. Dinner (optional @ $10)
8:00 p.m. Meeting

Speaker
Ron Clausen
Senior Project Manager
United Engineers & Constructors Inc.
Steams-Roger Division

"New Nuclear Technology"
The United States was once the world's leader in the
development of nuclear power. During the 50's, our Naval
Nuclear Power Program was the driving force behind the
design, construction, and operation of the first generation of
power reactors. This program set the stage for the
rapid worldwide development of commercial power reac-
tors which took place during the 60's and 70's.

While such development has continued elsewhere in
the world, the excessive construction costs, schedule
delays, licensing issues, and installation of excess capaci-
ty experienced in the U.S. by the mid-70's combined to
retard our commercial reactor development program.

In 1978, the accident at Three Mile Island directed the focus of
growing public sentiment against nuclear technology in
general, and towards the nuclear power industry in partic-
ular. The resulting cancellation of nearly all commercial
nuclear power plant construction in the U.S. during the
90's has crippled our worldwide leadership and eroded
domestic confidence in nuclear power as a viable source
of power for the future. The 90's are now upon us with
ever more serious issues regarding nuclear waste com-
ing to light. A glance at this history leads one to ask, "Is there a future for nuclear power in the United States?"

This talk will address the status of the nuclear power
industry in the U.S. today, various efforts currently under-
way to restore viability to the industry, and the trends
which seem to be developing that can affect the outcome.

Please contact Barbara at Peterson Company, 388-6322,
by Monday, September 17, 1990.

Joint PES/IAS
1990/1991 Tentative Meeting Schedule

October 18, 1990
"Evaluation of Shunt Capacitor Bank Switching
Using EMT"

November 15, 1990
"Adjustable Speed Drives and Harmonics"

December 20, 1990
No Meeting

January 17, 1991
"Advanced Electrical Technologies Designed into
the New Denver International Airport"

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

IEEE PES/IAS
1990/1991 Tentative Seminar Schedule

Friday, February 8, 1991
8:00 a.m. - 12:00 noon
"Analysis of System Harmonics Due to
Adjustable Speed Motor Drives"

Friday, April 5, 1991
8:00 a.m. - 12:00 noon
"Fundamentals of Relay Protection"

CS/ITS
Computer/Information Theory Society

Do you have an interest in the Computer/Information Theory Society activities? The society needs some good ideas and people to make them happen. There are many possible ways to participate. We could use recommendations for speakers and meeting optics. Would you be interested in arranging a meeting or other activity for the coming year, serving as a society officer, or participating on an officer nominating committee? If you have suggestions or can offer assistance, please call Rory Latho at 924-7534.
1991 Slate of Officers

The following officers have been proposed by the nominating committee for the IEEE Denver Section for 1991:

- Chairman: Gary Petersen
- Sr. Vice Chairman: H. Paul Meisel
- Vice Chairman, Members Services: Don Cottrell
- Vice Chairman, Student Activities: Doyle Eilberbruch
- Secretary: John Barnick
- Treasurer: Lew Beck, Jr.

Elections will take place at the next IEEE Denver Section meeting scheduled for October 10th.

Elati Substation by John Richards

The Public Service company of Colorado crews at 13th and Elati are currently constructing the foundations and walls of a new substation. This substation will house a state-of-the-art facility including a 230,000 volt sulfur hexafluoride (SF6) compact gas insulated substation (GIS). The SF6 portion of the substation will be housed in a GIS building 72 feet by 66 feet and 40 feet high. It will enclose four 230,000 volt breakers used to protect three transformers and two high pressure oil filled underground transmission lines. The entire substation will be surrounded by architectural wall. This will be the first SF6 substation for Public Service and the first in the region. The substation is scheduled for completion by the end of 1990. It will primarily serve the downtown loads through the underground networks. This substation is being built on a lot of land 125 feet by 275 feet; including approximately 40 feet of landscaping in front. A conventional open-air insulated substation would have required a plot 266 feet by 275 feet, and would have required that the alley be vacated.

Inside the substation will be room for three 50 MVA, 230,000 to 13,800 volt transformers and three lines of 13,800 volt metal clad switchgear. Initially, two transformers and one switchgear line will be installed. The first transformer and the sulfur hexafluoride compact substation have been received and are being stored off site, awaiting completion of the GIS building. The metal clad switchgear is being stored in the partially completed building which is on the North end of the substation. (See photo.)

IEEE 1991 International EMC Symposium

Call for Papers

The IEEE EMC Society seeks original, unpublished papers and proposals on potential sessions, workshops, and tutorials on all aspects of EMC.

Suggested Technical Areas

- EM Environment
- Emissions
- Immunity
- International EMC
- Military Applications
- EMI/RFI
- ESD
- EMC Analysis
- EM Environment
- Emissions
- Immunity
- International EMC
- Military Applications
- EMI/RFI
- ESD
- EMC Analysis
- System EMC
- EMC Design
- Measurements
- Instrumentation
- Test Facilities
- Cables & Connectors
- Filters
- Shielding
- Power Supplies

Paper Formats

* Six-page paper, 20 minute presentation
* Short (up to two-page) paper, 10 minute presentation

A page in the Proceedings allows approximately 1200 words, including formulas, figures and tables. Short papers on recent or late-breaking developments are encouraged.

Author's Schedule

- Synopsis (3 copies): Oct. 15, 1990
- Notification of Acceptance: Nov. 15, 1990
- Camera-Ready Copy: Feb. 15, 1991

Prospective authors should submit two copies of a 500- to 750-word synopsis with up to five illustrations, clearly explaining the contribution, its originality and relevance to EMC. Please indicate the desired paper format and technical area (by number or several numbers, if applicable) on the first page of the Synopsis. For anonymity during review, please identify the author(s) only on the cover sheet. Paper acceptance will be based on the following criteria: importance of topic, technical sophistication and depth, readability and clarity, presentation and discussion of results, novelty/原创性. Promotional and commercial presentations are not acceptable. Prospective session organizers submit the session title and a 1000-word Synopsis containing the session objectives and tentative topics for consideration. Upon acceptance, authors will receive an author's kit. All papers must be orally presented in the Symposium by authors or their designated presenters. Synopses and all communications should be directed to:

IEEE 1991 International Symposium on EMC
P.O. Box 609
Lincroft, NJ 07738

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Senior Grade -- Go For It!!!
by Don Lindahl, Membership Chairman

If you have been a member of IEEE for ten (10) years or more, you may be eligible for advancement to senior member grade. We are currently compiling a list of eligible members and will be sending you an application form.

The senior member grade is the highest professional grade for which application may be made and requires experience reflecting professional maturity. For advancement to the grade of senior member, a candidate needs to be an engineer, scientist, educator, technical executive or originator in IEEE designated fields. The candidate needs to have been active in professional practice for at least ten (10) years and have shown significant performance over a period of at least five (5) years.

Many employers consider senior member and fellow grades as recognition of professional achievement and a serious consideration in salary evaluation.

All newly elected senior members receive an attractive, personalized certificate. It is signed by the IEEE President and is very suitable for framing and displaying at home or in the office. A letter of recognition from the IEEE President to your boss will also be sent, if desired. There are no application fees or additional dues for a senior member grade.

Again, we strongly encourage you to take advantage of this opportunity to further your career and receive the recognition to which you are entitled. As I mentioned, we will be sending an application soon to those members who qualify for this honor, and we are prepared to assist wherever possible with your application. If you have any questions concerning your eligibility, please contact Don Lindahl at 770-797-907 during working hours.

The number -- 1-800-678-IEEE (4333) -- has been on line for a year. The quantity of phone calls received has grown from roughly 8,000 calls per month over the first eight months to 12,000 calls per month. The calls are primarily for product assistance (almost 50%) and for help with memberships (over 25%). In general, everyone seems to be pleased with this relatively new line of access to IEEE.

Centennial Subsection Chairman's Message by Sadral Ulla

The Centennial Subsection will be hosting the 1991 IEEE Region 5 Annual Conference in Laramie, Wyoming on April 19, 1991. We still need volunteers to help with organizing transportation, getting industry support, and we need people to judge the Student Paper Contest and the Student Design Contest. Please get involved in our Subsection activities by writing a note or calling me: Sadral Ulla, EE Department, Box 3295, University of Wyoming, Laramie, WY 82071-3295, (307) 766-6268 or (307) 766-2240.
The Institute of Electrical and Electronics Engineers - Denver Section

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Awards - Michael J. Foley, Forensic Engineering Inc., 730-7707
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Subsection Chairman
Black Hills - R.D. McNeil, Electrical Engineering Dept., South Dakota School of Mines & Technology, Rapid City, SD, 57701, (605) 394-2452
Centennial - Sedrut Ula, Electrical Engineering Dept., University of Wyoming, Laramie WY 82071, (307) 766-6268

Society Chapter Chairman
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Electromagnetic Compatibility - Mark Lapsha, Honeywell TID, 773-4626
Engineering in Medicine and Biology - Darrell Jones, University of Colorado Health Sciences Center, 270-8552, Jochen Edrich, University of Colorado Denver, 759-4002
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Joint Communications/Vehicular Technology - Ken Shugg, Martin Marietta Information and Communications Systems, 977-2443

Joint Electromagnetic Compatibility/Instrumentation Measurement - Richard Groves, Colorado School of Mines, 273-3677
Laser & Electro Optics Society - Arun K. Majumdar, University of Colorado Denver, 556-2715
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Senior Past Chairman - Michael J. Foley, Forensic Engineering Inc., 730-7707

RockIEEE Overlook Editor - David B. Richmond, United Engineers, 692-2465
Publication Coordinator - Anita Wanberg, dba Trade Services, 220-8042

The Institute of Electrical and Electronics Engineers
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The Month at a Glance

August 29, 1990
Executive Board Meeting

September 3, 1990
RockIEEE Overlook Deadline

September 11-12
Optical Fiber Meas. Symposium

September 12, 1990
Executive Committee Meeting

September 19, 1990
Software Quality Committee Meeting

September 20, 1990
PES/IAS Meeting
AP/MTT/GRS Meeting

September 26, 1990
Executive Board Meeting