

RockIEEE Overlook



THE INSTITUTE OF
ELECTRICAL AND
ELECTRONICS
ENGINEERS, INC.

Denver Section

March, 1990

Chairman's Message

by Jack Reesy

The Denver Section is sponsoring the dedication of a plaque to be installed on the obelisk at Fort Laramie, Wyoming commemorating the transcontinental telegraph. The Denver Section has the responsibility to plan and host this Milestone Dedication Ceremony. Mr. John Martin, Denver Section History Committee Chairman, is the force behind this project. To John, I extend my personal congratulations on a job well done.

The actual dedication ceremony will be held at Fort Laramie at 10:30 a.m., Sunday, August 5, 1990. A large contingent of IEEE members from the Denver Section would make this an outstanding program.

The budget for 1990 was a very important subject of the February 28 Denver Section Board Meeting. No major changes from the previous year were made to the new budget.

The quarterly Executive Committee Meeting is scheduled for 7:00 p.m., March 14, 1990.

The monthly Executive Board Meeting is scheduled for 7:00 p.m., March 28, 1990. Both meetings will be held at 2420 W. 26th Avenue in building D.

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

Tuesday, March 13, 1990

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

Speaker

Dr. Michael Wengler
Department of Electrical Engineering
University of Rochester

"Submillimeter Heterodyne Detection with Superconductive Electronics"

A superconductive tunnel diode called an SIS is an extremely sensitive detector of signals at frequencies of 100 GHz or higher. In fact, it is capable of detecting every photon that it absorbs. For spectroscopy of signals from 100 to 760 GHz, heterodyne receivers using an SIS as the mixing element, have demonstrated lower noise levels than any other technology. These receivers have been used for 100 to 260 GHz radio-astronomy at radio-telescopes around the world since about 1979, and have recently been used up to 500 GHz.

This talk will describe these SIS mixers, including the underlying physical principles of the SIS diode and its interaction with radiation, the design of SIS mixers, and the fabrication and testing of these mixers. Various SIS receivers in use on radio telescopes will be shown. The progress of our work with the quasi-optic SIS will be reviewed. Fabrication techniques for SIS diodes will be described.

Reservations are not required
Please call John Dunn at 492-5487 if you have any questions.

Reliability Society

The Software Reliability Forum meets every second Wednesday of the month from 2:00 - 4:00 p.m. For information, please call Rich Karcich at (303) 673-6223.

Joint PES/IAS

Power Engineering/Industry Applications

Thursday, March 15, 1990

Brooklyn's Saloon and Restaurant
2644 W. Colfax, Denver
572-3999

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

Speakers

Malin Jacobs
U.S. Bureau of Reclamation

"System Harmonics and Effects on Relays"

U.S. Bureau of Reclamation has done extensive investigations on electric power system harmonics and their effects on the relays applied to protect the electric power system. Malin will present some of the findings and also some of the U.S. Bureau of Reclamation conclusions.

Please contact Barbara at Peterson Company, 388-6322, by Monday, March 12, 1990.

EMC

Electromagnetic Compatibility

Tuesday, March 6, 1990

Autotrol
12500 N. Washington St., Northglenn
7:00 p.m.

Speaker

Tom Burns

"Testing for FCC Emissions"

Call Andy Anderson, 971-6422, for more information.

CS/ITS

Computer/Information Theory

Thursday, March 15, 1990

Exabyte
1745 38th St., Boulder
7:00 p.m.

"Helical Scan Technology"

There will be a presentation on Helical Scan Technology and its role in the tape backup industry. The presentation will be followed by a tour of the Exabyte facility.

How to get there

I-25 to U.S. 36 to Boulder. Exit on to the Foothills highway. West (left) on Arapahoe to 38th St., right on 38th St. to Exabyte building. Meet at easternmost building. There is a lighted "Exabyte" sign over the entrance (main lobby).

Reservations are required. Please call Rory Laiho,
(303) 924-7534.

Precollege Education in the United States

Americans believe that education is the foundation of the democracy, economy, and opportunities they've enjoyed for more than 200 years. The United States has built the largest education system in the world, currently spending more than \$300 billion a year to educate 58 million students in primary and secondary schools, colleges and universities.

More Americans now go to school for more years than students in any other nation. Today more than 60 percent of U.S. high school graduates continue with some form of higher education. A quarter of American workers are college graduates.

Unfortunately, measuring only the time spent in school does not provide an accurate appraisal of what people learn. Elementary and secondary school students from nations that compete economically with the United States consistently outperform U.S. students in mathematics, science, and reading tests.

Eighty-five percent of workers in the U.S. labor force have completed high school. However, 40 percent of today's high school graduates cannot read at the ninth-grade level. Many entry-level workers lack the basic skills necessary to understand training manuals, which costs industry an estimated \$25 billion a year in lost productivity and remedial education fees. Losses of this magnitude represent a serious handicap to firms trying to compete in world markets.

To maintain a competitive edge, American industry must continue to make creative scientific and engineering advances and produce high-quality products. Such developments can be accomplished only if the nation ensures that its future work force will have the scientific and technical training necessary to perform effectively on the job.

What Does the Future Hold?

Today, fewer American students are preparing for and choosing careers in science and technology. Yet the demand for scientifically and technically trained workers continues to grow.

Based on recent declines in engineering college enrollments, the Task Force on Women, Minorities and the Handicapped in Science and Technology, established by the U.S. Congress, predicts that by the year 2010 the United States could experience a shortage of as many as half a million engineers and scientists. In *Changing America: The New Face of Science and Engineering*, the Task Force points out that:

- Our most experienced scientists and engineers, recruited after Sputnik, will be retiring in the 1990s. Meanwhile, by the year 2000 the number of jobs requiring college degrees will increase dramatically. The education pipeline--from pre-kindergarten through the Ph.D. level--is failing to produce the scientifically literate and mathematically capable workers needed to meet future demand.

... Continued in the April Overlook

Reprinted from A Passport to Opportunity, Strategies for Improving Precollege Education, IEEE United States Activities.

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University of Colorado at Denver

The Division of Extended Studies and the Department of Electrical Engineering
present
Short Courses in Electrical Power Systems & Machines

We are conducting a series of one-day, eight-hour short courses on topics in electrical power systems, machines, and energy. These courses serve as professional updates for practitioners in the electrical engineering field. The next course is:

Symmetrical Components: Theory & Applications

Session One Friday, April 20 - Denver
Session Two Friday, April 27 - Fort Collins

Program cost: \$225 per participant. For two or more employees from same job site: \$200 per participant. The cost includes registration, refreshments, lunch, and the course manual.

To receive a program brochure, or to be added to the short course mailing list, contact
Arne Arnesen, CU-Denver Director of Corporate Programs, 893-8521.

1990 IEEE Area A Student Paper Contest

by Don Cottrell

One of the most important IEEE activities is the student paper contest, which the Denver Section helps sponsor as an annual event. This year, the contest will be held at the University of Colorado in Boulder, on Saturday March 3rd. The papers presented by the students are usually technical in nature, but can also cover management or societal aspects of subjects related to areas of IEEE concerns. The contest prizes are provided by the Denver Section, and they are as follows:

The first place winner and student branch of that school both will receive \$150;

The second place contestant and student branch of that school both will be awarded \$100;

The third place contestant and student branch both will receive \$75.

The first and second place winners of this contest will then compete in the Region 5 Paper Contest.

There are fourteen schools in Area A from Colorado, New Mexico, South Dakota, Texas, and Wyoming. Typically, one or two of Area A's top contestants are also winners in the Region 5 Student Paper Contest. Last year's first place winner in Region 5 was Cheryl Frierson from the University of Southern Colorado and Area A. We wish this year's Area A Student Paper contestants similar success.

Electric Power Testing, Inc.

Keith N. Henderson

P.O. Box 910
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Overlook Advertising

Yes, I want to advertise in the **RockIEEE Overlook**: Please place the following ad in the next issue(s) of the Overlook (circle one):

Ad Size	Rate	
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1/8 page	\$ 60.00/mo.	\$ 50.00/mo.
1/4 page	\$ 150.00/mo.	\$ 130.00/mo.
1/2 page	\$ 250.00/mo.	\$ 225.00/mo.
Full Page	\$ 400.00/mo.	\$ 360.00/mo.
Insert 8-1/2 x 11	\$ 200.00/mo.	

Business card ads must be actual business cards. All other ads must be provided in camera-ready format or additional set-up charges may apply. Inserts must be provided (quantity approx. 3800) and delivered to the printer.

Deadlines

April 1990 newsletter, March 2

May 1990 newsletter, April 4

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, 220-8042.

Schedule of Conferences and Meetings

Feb. 3 - 10, 1990	Vail	Aerospace Applications	Leo Mallette (213) 334-2909
			Richard Day (714) 863-0350
April 17 - 20, 1990	Vail	13th Annual IEEE Workshop on Design of Testability	T.W. Williams (303) 924-7692
April 23 - 25, 1990	Denver	Indium Phosphide & Related Mat.	Jim Coutts (303) 231-1261
June 17 - 21, 1990	Colorado Spgs	Utilities Communications	George Stoll (303) 571-2677
March - April, 1991	Fort Collins	Region 5 Conference	Tom Mills (303) 229-3737
April 28 - May 2, 1991	Boulder	PES Substation Com. Mtg.	George Flaig (303) 452-6111
June 23 - 27, 1991	Denver	International Communi- cations Conference	Russ Johnson (303) 796-9100
May 11 - 13, 1992	Denver	Vehicular Technology Conf. (VTC '92)	Don Cottrell (303) 871-3752
Sept., 1995	Denver	Petroleum & Chemical (PCIC)	John Nelson (303) 431-7895

Proposed Conferences and Meetings

IAS 1994 - 1995
ACM/IEEE Design Automation 1994
PES Joint Power Generation 1994
PES Summer Meeting 1995
MTT 1997
Transmission & Distribution 1997
ITC 1997-2000

The Institute of Electrical and Electronics Engineers - Denver Section

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Society Chapters -

Educational Activities - **Pankaj K. Sen**, EE & CS Dept., Univ. of CO Denver, 556-2872, 556-2685

Conferences - **John Tary**, Tri-State Generation and Transmission Association, 452-6111

Awards - **Charles Wright**, Public Service Company of Colorado (retired), 233-5553

Student Fund - **John Richards**, Public Service of CO, 329-1177

Professional Activities - **William D. Whipkey**, Amoco, 830-4713

Nominations - **Keith Henderson**, EIT Power Test, 428-1655

Membership - **Don E. Lindahl**, Siemens Energy & Automation, 770-7907

Pre-College Student Activities - **Dan Michaels**, Ball Aerospace, 939-5139

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Black Hills - (Acting Chairman) **Dr. Larry Simonson**, Electrical Engineering Dept, South Dakota School of Mines & Technology, Rapid City, SD, 57701, (605) 394-2459
Centennial - **Louis Thomas "Tom" Mills**, Hewlett-Packard Company, Fort Collins CO 80525, 229-3737

Society Chapter Chairmen

Aerospace and Electronics - **Henry Rackley**, Ball Aerospace, 690-1600

Electromagnetic Compatibility - **Andy Anderson**, Martin Marietta Aerospace, 971-6422

Engineering in Medicine and Biology - **Darrell Jones**, University of Colorado Health Sciences Center, 270-8552, **Jochen Edrich**, University of Colorado Denver, 759-4002

Joint Antenna and Propagation/Microwave Theory and Techniques/Geoscience and Remote Sensing - **John Dunn**, University of Colorado, 492-5487

Joint Computer/Information Theory - **Rory Laiho**, IBM, 924-7534

Joint Communications/Vehicular Technology - **Ken Shugg**, Martin Marietta Information and Communications Systems, 977-9164

Joint Electromagnetic Compatibility/Instrumentation Measurement -

Richard Groves, Colorado School of Mines, 273-3677

Joint Power Engineering/Industry Applications - **John Barnick**, ABB Power T & D Co., 969-0391

Laser & Electro Optics Society - **Arun K. Majumdar**, University of Colorado Denver, 556-2715

Power Engineering - **Kenneth McBryde**, Colorado Ute Electric Association, 249-4501

Reliability - **Juan Hernandez**, (719) 590-8880 x410

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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

Denver Section

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The Month at a Glance

March 3

Area A Student Paper Contest

March 6

EMC Meeting

March 13

APP/MTT/GRS Meeting

March 14

Section Executive Committee Meeting
Reliability Forum

March 15

PES/IAS Meeting
CS/ITS Meeting

March 28

Section Executive Board Meeting

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IEEE Denver Section