



THE INSTITUTE OF  
ELECTRICAL AND  
ELECTRONICS  
ENGINEERS, INC.

# RockIEEE Overlook

DENVER SECTION

OCTOBER 1988

## Society Chapter Meetings

Joint Boulder-Denver APS/MTTS/GRS - Antennas  
and Propagation, Microwave Theory and  
Techniques, Geoscience and Remote Sensing

Date: Thursday, October 18, 1988  
Place: National Bureau of Standards  
325 Broadway, Boulder, Room 4020  
Time: 4:00 - 5:00 pm  
Speaker: Dr. Gary Olhoeft, U.S. Geological  
Survey, Denver, Colorado  
Topic: "Electromagnetic Tomography"  
Time-domain electromagnetic propaga-  
tion measurements between two  
boreholes yield several kinds of  
information about the media between  
the holes. The ray-path distance  
divided by the propagation first-  
time-of-arrival is velocity. The  
reciprocal of the product of first-  
arrival amplitude times ray-path  
distance is proportional to attenua-  
tion. The change in shape of the  
wavelet is a measure of dispersion.  
Dispersion is the change in frequency  
content of the wavelet with propaga-  
tion distance. The velocity primarily  
represents changes in bulk density  
and water content. The attenuation  
primarily represents changes in frac-  
ture density and water content. The  
dispersion primarily represents  
changes in scattering. Back projec-  
tion reconstruction techniques allow  
tomographic velocity, attenuation and  
dispersion contour sections to be  
produced. Increased fracture density  
appears as increased attenuation and  
decreased velocity with little or no  
change in dispersion. The presence  
of an air-filled mine tunnel appears  
as an increase in velocity, attenua-  
tion, and dispersion.

Contact: Bob Seeley, Fortress Electronics,  
986-6790.

Joint PES/IAS - Power Engineering Society/  
Industry Applications Society

Date: Thursday, October 20, 1988  
Place: Jones Intercable Corporate Head-  
quarters, 9697 E. Mineral Avenue,  
Englewood, Colorado  
Take County Line Road Exit off I-25,  
turn West to Chester, turn North to  
East Mineral.  
Time: 6:30 pm  
Note: No dinner meeting.  
Topic: Tour of cable TV operations,  
including studio and galactic radio  
facility.  
Contact: Barbara, Peterson Company, 388-6322,  
by Monday, October 17, 1988.

Joint VTS/COMSOC - Communications Society/  
Vehicular Technology Society

Date: Wednesday, October 12, 1988  
Place: MCI Division Headquarters  
707 17th St. Suite 4200 (Arco Tower)  
Denver, Colorado  
Time: 6:30 pm - Complimentary hors  
d'oeuvres, courtesy of MCI  
7:30 pm - Program  
Speaker: Gene Warren and Pat Moran  
Topic: "T-1 Networks and ISDN"  
Contact: Reservations requested. Call John  
Hardzinski, 977-2224 (w), 693-2198  
(h) or Ken Shugg, 977-2226.

### Advance Meeting Notice

Date: November 9th or 10th 1988  
KDVR Channel 31

Please cancel your reservations if  
you are unable to attend a meeting.  
No-shows will be responsible for the  
cost (if any) of dinner.



Date: Thursday, October 20, 1988  
 Place: Dinner - (Optional from the Menu) Jose Muldoon's, 38th and Arapahoe, Boulder, CO  
 U.S. 36 to Foothills Highway Foothills Highway to Arapahoe, West on Arapahoe to J.M.  
 (on right).  
 Program - Cray Research Inc., 3375 Mitchell Lane.  
 From Denver: U.S. 36 to Foothills Highway, Foothills Highway to Valmont, East on  
 Valmont to 47th, North on 47th, East at the light onto Mitchell Lane.  
 Time: Dinner - 5:30 pm Program - 7:00 pm  
 Speaker: Cassandra Shaw  
 Topic: "Cray Supercomputing -- Architecture and Applications"  
 Contact: Reservations required, space limited. Please call Rory Laiho, 924-7534, or Sandy  
 Bish, 538-4717.

# Computer Society/Information Theory Society

I would like to briefly introduce you to the activities of the Joint CS/IT Societies in the Denver area.

We typically sponsor monthly meetings on a variety of software/hardware topics. In addition this year, we are co-sponsoring the entire Satellite Videoconference series. See the enclosed flyers for topics and mark these dates on your calendars!

The first Videoconference will be on October 4. This is a premier annual event and promises to be of interest to a broad range of engineers in the computer field. Our other principal activity is the co-sponsoring of Professional Development Seminars with several other professional societies in the area. You will receive mailings at your home as these become available.

Monthly meetings are generally the 3rd Thursday of each month. We try to vary the location and content to accomodate the broad interests of our membership.

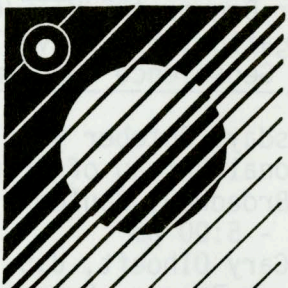
This chapter can only be as successful as the energy level of the volunteers that keep it going. Many thanks for the untiring efforts of the officers and volunteers!

Current officers are:

Sandy Bish	Chairperson
Rory Laiho	Vice Chairperson
David Ho	Secretary
Vacant	Treasurer
Malcolm Gillespie	Program Committee
Ed Seely	Program Committee

I would like to encourage your suggestions and topic requests. If we are not providing the services you expect, let us know! Please call me if you would like to discuss our activities, sponsor one of our meetings, or find out what you can do to help out. Some volunteer opportunities require only a few hours of effort.

Call Sandy Bish, (303) 538-4717.



**IEEE VIDEOCONFERENCES  
SEMINARS VIA SATELLITE**

**LIVE VIDEOCONFERENCES  
VIA SATELLITE NETWORK**  
 12:00 Noon - 3:00 P.M. USA Eastern Time

**1989  
Topic Areas**

**Self Testing of ICs - March 1**  
**Robotic Devices - April 6**  
**Integrated Product Processing for Engineers:  
A New Challenge - May 3**  
**Neural Networks - September 27**  
**RISC - October 26**  
**Machine Vision - November 29**  
 1988  
 Applications of Superconductivity - October 20  
 Supercomputers - December 7

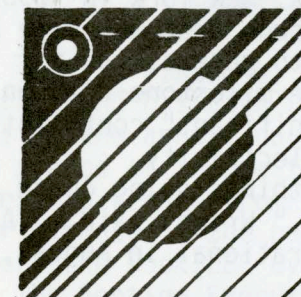
**SPECIAL PROGRAM**  
 The Interdisciplinary World of Computing - October 4, 1988  
 5 Hours: 11:30 A.M. - 4:30 P.M. USA Eastern Time

**Sponsors:** Denver Chapter of the IEEE Computer Society  
 Facilities Donated by A T & T

Dan Michaels, Chairman Pre-College Student  
 Activities Receives USAB Award.

The Regional Division Professional Award presented by the IEEE United States Activity Board (USAB) was awarded to Dan Michaels for his outstanding work in establishing the Science Olympiad Program. Dan is one of six individuals who are honored with this professional activities award. Congratulations Dan!

**Sponsors:** Denver Chapter of the IEEE Computer Society  
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IEEE VIDEOCONFERENCES  
SEMINARS VIA SATELLITE

## INTENDED AUDIENCE:

This videoconference is for the individual who is, or expects to be, involved in the use or design of computer-based systems. COMPUSAT 88 should also be of interest to student engineers as well as scientists and technologists seeking a broadening of their perspectives on interdisciplinary applications. The program will focus on state-of-the-art surveys and interdisciplinary trends and applications rather than on jargon.

## Why YOU should attend the COMPUSAT symposium:

- The symposium will expose you to **important issues** covering the whole spectrum of **computer technologies** and applications
- The first satellite symposium to include presenters from a wide range of **important centers** of computer research and development
- A unique **interdisciplinary experience** that will bridge your own specialty and the other **critical thrusts** in the field of computing
- The symposium covers a **long range view**, not covered in sales oriented computer shows, and a **broad perspective** than that obtainable from specialty conferences
- It provides an interactive program at your location which offers knowledge critical to your work at **minimum cost** and in a **single interactive day**

THE FIRST STATE-OF-THE-ART  
 INTERDISCIPLINARY SYMPOSIUM



# THE INTERDISCIPLINARY WORLD OF COMPUTING

Oct. 4, 1988 11:30 A.M. - 4:30 P.M. USA Eastern Time



Co-Sponsored by  
 The Computer Society Technical Activities Board  
 and  
 The Educational Activities Board of IEEE



COMPUSAT 88 will deal with key elements in computer design and applications. Beginning with trends in the design of underlying VLSI components found in every modern electronics application, it moves into DESIGN AUTOMATION and then on to TEST TECHNOLOGY, both involving methods widely applicable throughout computer design and applications. The program shifts into SOFTWARE ENGINEERING; you will be able to appreciate the common problems and trade-offs faced in hardware and software design and the innovations/solutions introduced by each community. The segments on PERSONAL COMPUTING and OFFICE AUTOMATION deal with the kinds of systems now familiar to most Americans and whose evolution is of great interest. They provide an update on the latest developments and an insight into emerging trends. The final segment probes two of the most advanced and often speculative application areas, MACHINE INTELLIGENCE AND VISION and ROBOTICS, where digital machines are increasingly capable of performing tasks less specifically defined than in the past and preview a fascinating future!

## THIS INTERACTIVE SATELLITE CONFERENCE WILL PROVIDE AN UPDATE ON EACH OF THESE KEY TECHNOLOGIES

### SOFTWARE ENGINEERING

SESSION CHAIR: Lorraine M. Duvall  
 Duvall Computer Technologies, Inc.

### ROBOTICS

SESSION CHAIR: Mohan M. Trivedi  
 University of Tennessee

### VLSI

SESSION CHAIR: Donald W. Bouldin  
 University of Tennessee

### MACHINE INTELLIGENCE AND VISION

SESSION CHAIR: Jake K. Aggarwal  
 University of Texas

### DESIGN AUTOMATION

SESSION CHAIR: Ron Waxman  
 University of Virginia

### PERSONAL COMPUTING AND OFFICE AUTOMATION

SESSION CHAIR: Walter R. Beam  
 George Mason University

### TEST TECHNOLOGY

SESSION CHAIRS: Thomas W. Williams  
 IBM Corporation  
 Jacob A. Abraham  
 University of Illinois

## Directions

From I-25  
 Exit west on 120th  
 Take 2nd left (south)  
 onto Pecos Street  
 Turn left (east) into 2nd  
 driveway  
 Meet in Lobby

Mail this form to: Registrar Sandy Bish, AT&T,  
 M/S 31D10, 11900 N. Pecos Street, Denver, Co.  
 80234 by Oct. 1, 1988. Enclose check payable to:  
 IEEE Computer Society. Phone: 538-8157 for  
 additional information.

Attendance is limited to the first  
 35 respondents.

Fees: Non-Members \$50  
 Members \$40  
 Students \$25

Includes:  
 Conference Materials

Time: 9:15 am - 2:30 pm

Location: AT&T  
 I-25 & 120th  
 Denver, CO

## REGISTRATION FORM

Please register me for "The Interdisciplinary World of Computing" symposium on  
 October 4, 1988

Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company Name \_\_\_\_\_  
 Company Address \_\_\_\_\_  
 \_\_\_\_\_ Zip \_\_\_\_\_  
 Company Phone \_\_\_\_\_ Home Phone \_\_\_\_\_  
 IEEE Member Number \_\_\_\_\_ Fee Enclosed \_\_\_\_\_



Ames to be Focus of Special Ceremony  
by Tony Daranyi

(excerpts from the Telluride Times-Journal)  
July 28, 1988

Charles Wright, a historian familiar with the region's precedent-setting development of electricity, likes to tell an anecdote about some of the trials and tribulations of running the Ames Power Plant - one of the world's first hydroelectric stations.

"The biggest problem for those operating the plant," he said, "was lightning striking the plant during those tremendous summer afternoon thunderstorms.

"As a result, the operators needed lightning arresters, so they developed one of the most successful - a tub of salt water that grounded the power lines," he recounted.

"One day during a severe storm," Wright continued, "a bull was drinking out of the tub when lightening struck. Of course, the bull died by electrocution.

"That's no bull," he joked.

It's no bull either that the Ames Plant - located north of Trout Lake at the Ophir Loop - helped make Telluride one of the first municipalities in the U.S. to be supplied with electricity from a distant power source.

At the time, Lucien L. Nunn and his brother Paul both researched the possibility of transmitting power over a long distance, a feat never before accomplished. Finally, on June 19, 1891 - 14 years before the same feat was realized at the Bridal Veil Plant,... the two men sent electricity from a generator in Ames to the Gold King Mine near Alta Lakes, a distance of 2.6 miles.

Suddenly, the Colorado mining industry was transformed as new inexpensive electrical power replaced the need for coal and timber, and the nascent electrical industry revolutionized as alternating current (AC), championed by Ralph Westinghouse, replaced direct current (DC), advocated by Thomas Edison, as the most viable method of transmitting electricity over distances.

And now, 97 years later, the plant is being commemorated as a "Historical Electrical Engineering Milestone," by the IEEE.

"The Ames Plant is the first AC generating plant to be used for industrial purposes," Wright noted. "Everything to that point had been DC.

Wright, a retired Public Service of Colorado employee, pointed out that the design of the Ames Plant later became instrumental in

helping design a similar, but much larger, facility at Niagra Falls, New York in 1895.

He noted that although Ames may have been the first in the world to generate AC for commercial purposes, the milestone will only cite it as being a "significant" contribution to the development of electricity.

"There were other things going on in Europe at the same time," Wright said. "A German plant became operational in August, 1891."

Plus, he noted that a plant in Willamette Falls, Oregon, near Portland, actually generated electricity before the Ames Plant, but was used only for street lighting, not industrial purposes.

Not having been put to rest during its 97-year history, the plant is still active in generating electricity.

Larry Day, a vice president of Colorado-Ute Electric Association, the current owners of the plant... explained, "The plant is operating at full capability now," generating three to four megawatts of electricity.

The power generated by the plant is part of the integrated system grid maintained by Colorado-Ute and other utility companies throughout the west.

"Some of the Ames' power may be serving as far north as Canada and as far south as the lower Baja Peninsula," Day noted.

At the moment, Colorado-Ute is in the process of completing work at the Trout Lake Dam, the source of water for the plant... The water level at the lake has been lowered, Day explained, to put a drain in the face of the dam. "We should have the work completed within one month," he said.

While some maintain that the existing plant at the site is the original one, Wright noted that the first plant operated for only six years, and used water piped in from Howard's Fork of the San Miguel River. That plant was then succeeded by the so-called Old Ames Plant, which has also been replaced.

"The plant that is there now was built before 1907," Wright said, "though I don't know the exact date. This is the third one that has existed on the site."

Similar to the workings of the Bridal Veil plant, which is now undergoing restoration efforts, the Ames plant generated electricity using pressure created by water that is carried in pipes from Trout Lake.

"The pressure and the volume of the water control the amount of electricity generated," explained Day.

Chairman's Message  
by Mike Foley

Section Financial Report. The Section general fund has cash reserves which are about equal to the annual budget of \$13,000. The main source of income for the Section is the membership rebate from headquarters, and the major expense is the publication of the newsletter, the RockIEEE Overlook

The Section Executive Committee is asking all members to help identify prospective corporate supporters of the newsletter. Support may be in the form of placing a corporate business advertisement in each issue of the Overlook, or may be providing a publishing service for the Overlook which is either donated or at a nominal cost. Such services would be typesetting, printing, handling and mailing each issue. The processing of the mailing labels, which are attached to your newsletter, is a service which is also needed. Any company that has capability for running computer magnetic tape, formatted data onto mailing labels would be of great assistance to the Section. If you know that your company or other entity has these services, please contact Gary Petersen, Vice-Chairman at 692-2680. This is your opportunity to make a contribution to the Section -- please give my request your consideration.

November Section Meeting. Your Executive Board is making plans for a November Section meeting which will be of high interest to all members. Watch the November issue for details.

IEEE Election. By now, you should have received your 1988 ballot for the 1989 President and Vice-President election, as well as the election of the Region 5 Director-elect for 1989.

As you are probably aware, IEEE has adopted the approval voting procedure, which allows you to vote for as many candidates as you feel would be qualified for the position. If you have been keeping up with the various issues surrounding the petition candidate, Erwin Feerst, you may realize your vote is very important in the election. Please consider the candidates and vote your choice(s).

Please make a special note that John Martin, of the Denver Section Executive Board

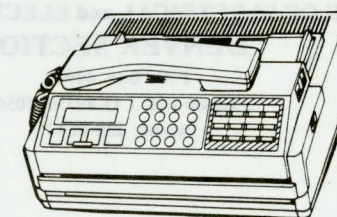
is a candidate for Region 5 Director. I personally endorse John's candidacy and believe that he will represent the interest of Region 5 and the Denver Section in your behalf. Please indicate your choice by voting.

1989 Section Committee Membership.

Those of you interested in participating on any one of the standing committees of the Section for 1989 (see listing on the Overlook back cover) are asked to contact Mike Niehoff, Nominations Chairman at 480-6955. There are many positions and activities in which you can participate and lend your experience and expertise to the betterment of the Section. This is not an idle invitation. I know that there are many individuals who can provide a great contribution to the Section. If you have any questions on what specific areas are available, please call me at 789-0078.

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Dept. of Electrical Engin.  
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480-6940

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779-6990

Past Chairman - **Michael E. Niehoff**, Public Service Company of Colorado, 480-6955

Professional/Industrial Liasion - **John Martin**, Public Service Company of Colorado, (retired), 233-0023

Student Branch Activities - **Charles Wright**, Public Service Company of Colorado (retired), 233-5553

## EXECUTIVE COMMITTEE (Includes Executive Board)

### STANDING COMMITTEE CHAIRMAN

Society Chapters - **H. Paul Meisel**, Microsemi Corporation Colorado, 469-2161  
Student Branch Activities - **Charles Wright**, Public Service Company of Colorado (retired), 233-5553  
Professional Activities - **William D. Whipkey**, Amoco, 830-4713  
Conferences - **John Tary**, Tri-State Generation and Transmission Association, 452-6111  
Professional/Industrial Liasion - **John Martin**, Public Service Company of Colorado (retired), 233-0023  
Awards - **Charles Wright**, Public Service Company of Colorado (retired), 233-5553  
Nominations - **Michael E. Niehoff**, Public Service Company of Colorado, 480-6955  
Student Fund - **Dan Michaels**, Ball Aerospace, 939-5139  
Membership - **Herb Bass**, Herb Bass & Associates, 530-7509  
Educational Activities - **Pankaj K. Sen**, EE & CS Dept., University of Colorado Denver, 556-2872 or 556-2852  
Pre-College Student Activities - **Dan Michaels**, Ball Aerospace, 939-5139

## EXECUTIVE COMMITTEE (Ex-Officio Members)

### SUBSECTION CHAIRMEN

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 Co., Fort Collins, CO 80525, 1-229-3737

### SOCIETY CHAPTER CHAIRMEN

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Aerospace and Electronics - **Henry Rackley**, Ball Aerospace, 690-1600, 939-6069  
Reliability - **Dale Butler**, Martin Marietta Aerospace, 977-9054  
Electro-magnetic Compatibility - **Andy Anderson**, Martin Marietta Aerospace, 971-6422  
Power Engineering - **Kenneth McBryde**, Colorado Ute Electric Association, 1-249-4501  
Joint Antenna and Propagation/Microwave Theory and Techniques/Geoscience and Remote Sensing - **Bob Seeley**, Fortress Electronics, 986-6790  
Joint Communications/Vehicular Technology - **John Hardzinski**, Martin Marietta Information and Communications Systems, 977-2224  
Joint Computer/Information Theory - **Sandy Bish**, AT&T Bell Laboratories, 538-4717  
Joint Electro-magnetic Compatibility/Instrumentation Measurement - **Richard Groves**, Colorado School of Mines, 273-3677  
Joint Power Engineering/Industry Applications - **Bob Saint**, Union REA, 659-0551  
Start-up Chapter, Laser & Electro Optics Society - **Arun K. Majumdar**, University of Colorado Denver, 556-2715

**SENIOR PAST CHAIRMAN** William D. Whipkey, Amoco, 830-4713

## THE INSTITUTE OF ELECTRICAL and ELECTRONICS ENGINEERS DENVER SECTION



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## THE MONTH AT A GLANCE

September 28

Section Executive Board Meeting

October 12

VTS/COMSOC Meeting

October 18

APS/MTTS/GRS Meeting

October 20

PES/IAS Meeting  
CS/ITS Meeting

October 26

Section Executive Board Meeting

November 2

Section Executive Committee Meeting

**RockIEEE Overlook**  
Official Publication of the  
IEEE Denver Section