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FERROELECTRICS,
AND
FREQUENCY CONTROL
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NEWSLETTER**



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2000 IEEE International Ultrasonics Symposium



22-25 October 2000

Caribe Hilton, San Juan, Puerto Rico

2000 IEEE International Ultrasonics Symposium

**October 22-25, 2000
Caribe Hilton
San Juan, Puerto Rico**

**Sponsored by the Ultrasonics,
Ferroelectrics & Frequency Control
Society**

Invitation from the General Chair

Dr. Rodolfo Almar

It is with great pleasure that I invite you to the 2000 IEEE International Ultrasonics Symposium to be held on October 22-25 at the Caribe Hilton in San Juan, Puerto Rico, one of the finest hotels in the Caribbean.

The tropical island of Puerto Rico offers a wide variety of interesting places to enjoy, such as miles of white sandy beaches, mountains and valleys, and many other natural wonders. In addition to the natural splendors you will find yourself surrounded by warm and friendly people and a very rich Spanish cultural heritage.

The technical program will provide a stimulating and interesting forum to discuss the most recent developments in the world of Ultrasonics. In addition, we will be honored to have Dr. Jon Hagen of Arecibo Observatory start the proceedings with the plenary talk.

The social committee set an attractive social program both for the attendees and guests. A cocktail reception will take place, weather permitting, at the famous Fort San Geronimo, built by the Spanish Armada to defend the city during colonial times. This is a buffet party held under the stars in the old Spanish fortress on the seashore. Special decorations, including Spanish flags, "bohios" for the hors d'oeuvres, wooden rum barrels, sand bags and kerosene torches at the entrance will recreate the time when the Spanish garrison guarded Old San Juan. From there we will step into the San Geronimo Ballroom where fine Puerto Rican delicacies will be served at the tune of Puerto Rican folklore music and dance.

I hope that you will join us in San Juan to participate in an exciting technical program and also to enjoy the attractions and cultural heritage that Puerto Rico offers.

**Dr. Rodolfo Almar
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Message from the Technical Chair

Peter V. Wright

The annual IEEE Ultrasonics Symposium represents the focal point of the year for many in the worldwide ultrasonics community. The strength of the symposium has been

increasing steadily from year to year with a significant growth in both the number of participants and the number of presentations. It is truly an international event with attendees coming from every major continent. This year, for the momentous year 2000, we are holding the meeting in the beautiful Caribbean island of Puerto Rico, whose multicultural heritage promises to provide the ideal background for the conference.

I would like to encourage each and every one of you to attend and to contribute to this year's meeting. Thanks to the dedicated efforts of the members of the Technical Program Committee and the staff at FASS, the symposium promises to be better than ever. I am confident that that there will be a widespread participation in all the technical areas in the symposium and that the level of the presentations will continue at its usual high level. If you are active in the field and have original work to report, I hope you will consider sharing it with us at the symposium by submitting an abstract of the work before the closing date of 19 May, 2000. It is only through such an open exchange that the ultrasonics community will remain healthy and viable. If you are involved directly or indirectly in the ultrasonics community, the symposium should be a must in your calendar. As in past years, an interesting social program is also being organized for spouses to allow you to make the symposium a family event. In addition, let me suggest that for your own personal enjoyment, you take some time either before or after the symposium to explore this Caribbean paradise. I look forward to welcoming you all to the symposium.

Technical Program Chair

Peter Wright

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PLENARY SESSION

San Geronimo Ballroom
Monday, October 23, 2000
8:00 a.m.- 9:30 a.m.

WELCOME

Rodolfo Almar, General Chair

TECHNICAL PROGRAM

Peter Wright, Technical Program Chair

Awards and Recognitions

Millennium Medal
Achievement Award
Distinguished Service Award

September 2000

Outstanding Paper Award

Fellow Awards

Distinguished Lecturer Award

Fred S. Hickernell, UFFC-S President

Reinhard Lerch, UFFC-S Awards Committee Chair

2000 UFFC-S Plenary Speaker

Dr. Jon Hagen
Arecibo Observatory

"The Arecibo National Observatory: Probing the Heavens from Paradise."

The Arecibo Radio Telescope is the world's largest single-dish telescope. The speaker will describe the 1000-ft diameter radio/radar telescope and its transmitting and receiving systems. Particular questions to be answered are:

1. Why did Cornell select Puerto Rico as the site for the observatory?
2. Why is the main reflector spherical rather than parabolic?
3. How is the spherical aberration corrected?
4. Why are radar measurements of the ionosphere done at 430 MHz when it is well known that the ionosphere is transparent to frequencies much above the short-wave band?
5. How does the telescope produce photo-like images made of planets and asteroids when these objects subtend angles smaller than the angular size of the radar beam?

Some current research programs include pulsar observations, not only to understand these neutron stars, but to study indirectly the interstellar medium and possibly, to detect gravitational radiation. Small asteroids, discovered at optical observatories, can be probed immediately by the Arecibo radar to determine their distances and closing velocities. The high sensitivity of the 1000 ft dish makes it ideal for the study of galaxies with low surface brightness - now thought to be much more numerous than the familiar spiral and elliptical galaxies. For very long baseline interferometry (VLBI), the Arecibo dish is used together with one more other radio telescopes on earth or, in one case, orbiting the earth.

Jon Hagen is a senior staff engineer at the Arecibo Observatory. He received a Ph.D. in Electrical Engineering from Cornell University in 1972 and, except for three years at the Raytheon Co., has worked at Arecibo and at the Observatory's support laboratory at Cornell. His interests include microwave systems and digital signal processors

Guest Program

A varied program is being planned to entertain those who register for the Symposium as guests. Registration permits you to enjoy our continental breakfast each morning, as well as the evening Social Reception. Three guest tours, individually priced, will also be arranged for the enjoyment of the guests.

PLEASE NOTE: Only registered GUESTS may attend the Guest Breakfast.

Guest Tours

Sunday, October 22, 2000
Old San Juan - 1:00 PM - 5:00 PM

Walking Tour of Old San Juan. Visit the San Cristobal Fort, the largest fort built to protect San Juan from enemies approaching from the sea. See the Governor's Mansion, "La Fortaleza" the oldest governors home still in use in the Western Hemisphere. You'll see the Rogativa Plaza which represents Puerto Rico's victory over British troops in 1797 only because the enemy confused a religious procession taking place with the approach of additional reinforcements. Walk through the door of San Juan to the Paseo La Princesa. Beautiful cobblestoned streets lined with Art Galleries, Sidewalk Cafes and chick boutiques, San Juan is a true shoppers paradise. After your guided tour there will be time for you to do some shopping. Cost: \$32.00 per person based on a minimum of 18 persons traveling together. Lunch is not included.

Monday, October 23, 2000

The Rain Forest - 10:00 AM - 3:00 PM

Discover the exotic vegetation of El Yunque, the only tropical rain forest in the U.S. National Park System. Featuring over 240 species of plant and wildlife, waterfalls, streams and hiking trails leading to enticing locations. From the observation point you can enjoy the unique, mesmerizing view of the entire northeast coast of the island.

Stop for a delicious Puerto Rican buffet lunch at a simple but delightful local eatery at the foothills of the rain forest. Enjoy a taste of authentic local cuisine, your choice of meats, salads, desserts, coffee and soft drink included, while relaxing in a casual dining atmosphere. On our way back we'll make a short stop at beautiful Luquillo Beach for some picture taking.

Cost: \$50.00 per person based on a minimum of 18 persons traveling together. Cost includes admission to the Rain forest and Lunch (Gratuities Included, No Alcoholic Beverages).

Tuesday, October 24, 2000

**Bacardi Distillery Tour and
Shopping Spree at Plaza Las Americas
10:00 AM - 5:00 PM**

We'll pick you up at 10:00 AM for an hour tour to the Bacardi Distillery. See how Bacardi rum is distilled and bottled. Learn how one of the world's top selling spirits is produced. A guided tour will take you through the rum plant, the museum and the tropical gardens. Following this tour enjoy complimentary drinks at the open-air pavilion. Then we will continue with shopping spree in the largest shopping mall in the Caribbean. There's always something on at Plaza: fairs, trade shows, exhibitions, and even when there's not Plaza is always fun. Delight in the beautiful pieces of art sprinkled throughout the mall. The recently renovated Plaza Las Americas boasts over 200 stores, a great Food Court with 25 different fast food choices and many other options as well. Lunch in on your own.

Recommend pick up time 4:00 - 5:00 PM

Cost: \$25.00 per person for the round trip transfer based on a minimum of 18 persons traveling together.

Wednesday, October 25, 2000

**Camuy River Cave Park / Arecibo Observatory Full Day*
7:30 AM (departure time) to 5:00 PM (arrival time)**

Embark on an underground adventure at the Camuy River Cave Park, featuring a spectacular array of caverns safely adapted for visitors. Located in the northern area of the island, the caverns, which were formed by the flow of the Camuy River one million years ago, is one of the largest systems of connecting caverns in the Western Hemisphere. The tour will take you through caverns holding enormous stalactites and stalagmites. The Camuy River, which runs through the caverns interior, is also believed to be one of the most spectacular underground rivers in the world. Admission fee is included.

If time permits, a stop at the Arecibo Observatory on the way back to San Juan will be included. The 600-ton suspended platform of the Arecibo Observatory - site of the largest radar/radio telescope in the world, equal in size to 13 football fields - rises some 565 feet out of a bluegreen jungle south of Arecibo. Here, scientists from Cornell University and the National Science Foundation study the planets and distant galaxies by gathering radio waves from space.

A delicious box lunch consisting of a sandwich, fruit, chips or cookies and a soft drink, will be included for this tour so that no time will be wasted in our busy itinerary.

Cost: \$65.00 per person based on a minimum of 25 persons traveling together. * This includes lunch and admission to the Caves, admission to the Observatory (\$3.50 per person) is not included.

Short Courses — Don Malocha

Course 1: Fundamentals of Ultrasonic Waves

Instructor: David Cheeke— Concordia University,
Montreal, Quebec, Canada

Time: Sunday Morning, October 22, 2000;
8:00am - 12:00 noon.

Course 2: Beamformation in Medical Ultrasound

Instructor: Kai E Thomenius, GE Corporate R&D,
Niskayuna, NY, USA

Time: Sunday Morning,
October 22, 2000;
8:00am - 12:00 noon

**Course 3: SAW, Pseudo-Saw and BAW:
Materials and Devices**

Instructor: Mauricio P. daCunha
University of Sao Paulo,
Sao Paulo, Brazil

Time: Sunday Morning,
October 22, 2000;
8:00am - 12:00 noon.

**Course 4: Ultrasound Systems for Blood Velocity
Estimation**

Instructor: Joergen Arendt Jensen,
Technical University of
Denmark Lyngby, Denmark

Time: Sunday Afternoon,
October 22, 2000;
1:00pm - 5:00 pm.

Course 5: Introduction to Acousto-Optics

Instructor: Dennis R. Pape,
Photonic Systems Incorporated,

Time: Melbourne, Florida
Sunday Afternoon,
October 22, 2000;
1:00pm - 5:00 pm

Course 6: **Introduction to Third Generation Wideband CDMA Systems and Their Impact on SAW Technology**

Instructor: Robert Weigel and Clemens Ruppel*,
University of Linz, Linz, Austria
*Siemens AG, Munich, Germany

Time: Sunday Afternoon,
October 22, 2000;
1:00pm - 5:00 pm

Invited Speakers and Topics

GROUP 1 (Ton van der Steen): MEDICAL ULTRASONICS

Samuel A. Wickline
Washington University Medical Center
"Targeted contrast agents".

F. Stuart Foster
University of Toronto
"High frequency imaging".

Nico de Jong
Erasmus University Rotterdam
"Contrast harmonic imaging".

Michalakis Averkiou
ATL Ultrasound
"Tissue harmonic imaging".

Wayne Rigby
GE Corporate Research and Development
"Phase aberration correction".

Pascal Laugier
Université Paris 6
"Bone characterization".

GROUP 2 (Don Yuhas): NDE & INDUSTRIAL APPLICATIONS

Bernhard Jakoby
Robert Bosch GmbH
"Microacoustic sensors for automotive applications".

Leonid Matsiev
Symyx Technologies
"Application of flexural resonators to high throughput liquid characterization"

Mark E. Schafer
Perceptron, Inc.
"Ultrasound for defect detection and grading in wood and lumber".

Reinhard Lerch
Friedrich-Alexander-Universität
Erlangen-Nürnberg

"Advanced computer modeling of magnetomechanical transducers and their sound fields".

GROUP 3 (Bikash Sinha): PHYSICAL ACOUSTICS

Joseph A. Bucaro
Naval Research Laboratory
"Moving vibrational measurement techniques, methodologies, and concepts from macroscopic applications to the elastic microworld".

Helge E. Engan
Norwegian University of Science and Technology
"Acousto-optic coupling in and optical fibers".

V. I. Alshits
Russian Academy of Sciences
"The role of anisotropy in crystalloacoustics".

Amit Lal
University of Wisconsin
"Ultrasonic microfluidic systems".

I. C. Chang
Aurora
"Acoustooptic technology for optical telecommunications".

GROUP 4 (Gary Montress): SURFACE ACOUSTIC WAVES

Hans Meier, Jürgen Machui, and Gerd Riha
Epcos AG
"Miniaturization and advanced functionalities of SAW devices".

Kazuo Eda, Keiji Onishi, and Yutaka Taguchi
Matsushita Electric Industrial Co., Ltd.
"Direct bonding of piezoelectric materials and its applications".

Group 4 Invited Posters:

Michio Kadota
Murata Manufacturing Co., Ltd
"BGS wave and SH wave resonator filters using edge reflections".

GROUP 5 (Lewis Brown): TRANSDUCERS & TRANSDUCER MATERIALS

Clyde Oakley
Tetrad Corporation
"Single crystal piezoelectrics: a revolutionary development for transducers?"

Martin Harmer
Materials Research Center
"High strain single crystal actuators produced by seeded polycrystal conversion".

Group 5 Invited Posters:

Alice Chiang
Teratech Corporation
"PC-based ultrasound imaging system in the probe"

George Schulze-Clewing, Michael J. Eberle and Douglas N. Stephens
Endosonics Corporation
"Miniaturized circular array".

Proceedings

The Symposium Proceedings including the CD-ROM version will be available in early 2001. A soft-cover copy will be shipped to all paid registrants except students, retirees, guests, and one-day registrants. A hard-cover copy may be ordered for an additional \$50.

Extra copies of the Symposium Proceedings may also be ordered at the registration desk. Additional soft-cover Proceedings, \$100; additional hard-cover proceedings, \$150.

For overseas mailing addresses, an additional \$55 per copy is required to defray the air and freight mailing costs.

Please note that only those papers that are presented at the Symposium will be included in the Proceedings.

Registration & Fees

All Symposium participants and guests must register and are requested to wear badges. The Symposium fee includes admittance to all technical sessions, and a soft-cover copy of the Symposium Proceedings (except for students, retirees, one-day and guest registrants). Details of evening and social events are provided in the Social Program section.

Symposium Fees:	Advance On-Site
IEEE Members	(a) \$340 \$380
Non-Members	(a) \$420 \$465
Students & Retirees	\$50 \$60
Guests, Adult	\$40 \$40
One-day Registration	\$150 \$150

(a) Including soft-cover proceedings and CD-ROM.

Short Course Fees:	Advance On-Site
IEEE Members	\$120 \$130
Non-Members	\$150 \$160
Students & Retirees	\$50 \$60

The reduced rates for advanced registration are available only by completing the advance registration form (it is also located at the center of the Advance Program), enclosing proper payment, and mailing to:

2000 IEEE International Ultrasonics Symposium
c/o FASS
1111 N. Dunlap Avenue
Savoy, IL 61874
USA
or FAX to:
217/398-4119

The Advance Registration form must be received by FASS by September 15, 2000. Postmarks do not apply. Each registrant must complete a separate Advance Registration Form. The remittance is payable, in US Dollars only, by personal or company check drawn on a US Bank, money order, VISA, MasterCard, or American Express. Bank drafts, foreign currency, and purchase orders will not be accepted. For advance registration, the remittance must accompany the Advance Registration Form. On-site registration must be made in US dollars.

Refund Policy

There will be a \$25.00 service charge to process refunds for those who have pre-registered but who are unable, for whatever reason, to attend the Symposium. A letter requesting the

refund should state the registrant's name and to whom the refund check should be made payable. No refunds will be given for requests received after October 8, 2000.

Social Program

EVENING EVENTS

Monday, October 23, 2000

Social Gathering/Reception

6:30 pm - 9:00 pm

Place: Tropical Gardens/San Geronimo Ballroom

After the first day's sessions, renew old friendships and make new ones at the Social Reception with hors d'oeuvres and a cash bar.

Tuesday, October 24, 2000

Social Reception/Banquet

6:30 pm - 10:00 pm

Place: Fort San Geronimo/San Geronimo Ballroom
Conquistador's Night

After the second day's session come join us in a Conquistador's Night at the over 500 years old San Geronimo Fort of the Oldest Fort in America. San Geronimo Fort is a small 17th Century fort, located on the grounds of the Caribe Hilton Hotel. The Fort was the foremost defense fortification in the presence of attacks by enemy forces shunning the heavy artillery of El Morro Fortress. The fort repelled attacks by Sir Francis Drake in 1595, the "earl of Cumberland" (Sir George Clifford) in 1598, and Sir Ralph Abercromby in 1797. King Carlos IV of Spain granted the coat of arms to the Regiment of the City of San Juan for heroism demonstrated during the attack of the British forces in 1797.

The fort is an outstanding venue for a theme cocktail reception. Lights are strung throughout the fort and special decorations, including Spanish flags, "bohios" for the hors d'oeuvres, wooden rum barrels, sand bags and kerosene torches at the entrance are set out to recreate the time when Spanish garrison guarded Old San Juan. A bugler sounds a welcome fanfare to the guests as they cross the bridge to the Fort entrance, guarded by soldiers dressed in the Spanish Conquistador uniforms.

From there we will step into the San Geronimo Ballroom where fine Puerto Rican delicacies will be served at the tune of Puerto Rican folklore music and dance. We will close the night with the excellent dancing music of Arpeggio. Come and join the enchantment of Puerto Rico.

Travel Information

The Caribe Hilton is located next to the 16th century Fort San Geronimo at the west end of Baldorioty de Castro Avenue - less than one mile from the Condado shopping and entertainment area, two miles from historic Old San Juan, 10 minutes from the main business district and 15 minutes from Luis Munoz Marin International Airport.

Travel Assistance

San Juan, Puerto Rico is reached by air. All major airlines are available: American, ATA, Continental, Delta, and US

Airways. From the airport, you can rent a car or take a taxi (\$17.00 one way) from the baggage terminal to the hotel door. If renting, we have arranged a group rate with Hertz Rental A Car company (787-791-0808, 800-654-3030, Fax 787-791-6384). Because of limited capacity, we urge early reservations. The discount number to use from Hertz is CV#022K0092.

Special discounted airfares for the IEEE International Ultrasonics Symposium on October 22-25, 2000 in San Juan, Puerto Rico have been negotiated with Continental and American Airlines. Continental Airlines is offering a 13% discount off the lowest available coach airfares. If booked 60 days in advance, Continental is offering an advanced booking incentive that increases the discount by an additional 5%. Where super-saver or coach airfares are not applicable, Continental is also offering zone fares. American Airlines is offering a 10% discount off the lowest available coach airfares. Discounted airfares are also available on other airline carriers. Please call IEEE Travel Services for availability. Some restrictions apply

and airfares are guaranteed to be the lowest available at the time of ticketing.

Travel arrangements using the designated air carriers, or the carriers of your choice can be made through IEEE Travel Services by calling (800) TRY-IEEE, (800-879-4333) within the US and Canada. Outside of the US and Canada, call (732) 562-5387 between the hours of 8:30 a.m. and 5:30 p.m. EST. Monday through Friday. Or, you may visit our new on-line travel service web site at www.ieeetravelonline.org. This secure site offers simple and convenient service through which you can search, reserve, and ticket your travel anytime, anywhere.

You may also fax requirements to the IEEE Travel Service at (732) 562-8815. When faxing, please be sure to include your travel dates, departure, and return times, and phone and fax numbers. A Travel Counselor will contact you promptly. Please note these airfares are good for outside the US and Canada.

2000 IEEE/EIA International Frequency Control Symposium and Exhibit

This year's Frequency Control Symposium and Exhibition was held at the Westin Crown Center Hotel in Kansas City, Missouri. Attendance at the conference was 553 with representatives from 18 countries. This meeting signaled the joining of the IEEE Frequency Control Symposium with the Piezoelectric Devices Conference and Exhibition. To mark this marriage of conferences, Jack Kay of the Piezoelectric Devices Conference and Don Sullivan of the Frequency Control Symposium served as Co-Chairmen. The outstanding technical program was assembled under the leadership of John Prestage, the Technical Program Committee Chairman. The well-attended Tutorial Sessions, organized by Lute Maleki, were held on June 6 and the Symposium followed on June 7-9. The exhibition, arranged by Tom Jones and held concurrently with the conference, was a tremendous success, with more than 45 companies exhibiting



Marci Staudte, wife of the late Juergen Staudte presenting the Juergen Staudte Memorial Award

products. The meeting was co-sponsored by the IEEE Ultrasonics, Ferroelectrics and Frequency Control Society and the EIA Electronic Components, Assemblies and Materials Association.

Jack Kay served as Local Arrangements Chairman. He arranged for great daily lunches, speakers breakfasts, receptions held in the exhibition, and an outstanding dinner outing at the American Museum of Jazz, which is

co-located with the Associated Negro League Baseball Museum. A jazz band that focused on the distinctive jazz that has developed over the years in the Kansas City area accompanied dinner, which consisted of traditional Kansas City barbecue.

Plenary sessions at the beginning of each of the first two days provided particularly stimulating discussion of issues that, while not in the mainstream of the conference, involve timing. William J.H.



Fred Hickernell, President of the UFFC, addressing the symposium.



From left to right, John Vig, Mike Mirarchi, Arline Daley, and Barbara McGivney enjoying dinner during the symposium.



Charles Adams (left) presenting the David P. Larsen Award to Bob Kinsman. Jim Wordelman, who shared the award with Bob, was not available.



John Kosinski (right) presenting the C.B. Sawyer Award to Boris Mill.



Mike Garvey (left) presenting the I.I. Rabi Award to Bill Riley

Andrewes of Harvard University presented a history entitled "Finding Space on Earth: The Quest for Longitude 1500-1800." The second plenary speaker, Donald L. McEachron of Drexel University, presented a paper entitled "Time and Time Again: The Influence of Biological Rhythms on Human Health and Performance."

The Annual IEEE and EIA Awards were presented during the first plenary session. These five key awards and their recipients were: the Cady Award to *Richard M. White* of the University of California at Berkeley for pioneering the early understanding of SAW devices, the I.I. Rabi Award to *William J. Riley* of Datum, Inc. for outstanding achievement in the development of high performance gas cell rubidium frequency standards and for contributions to the understanding of frequency stability analysis; the C.B. Sawyer Award to *Boris Mill* of Moscow State University for pioneering the development of the langasite family of single crystal piezoelectric materials; the Juergen Staudte Memorial Award to *Errol EerNisse* of Quartzdyne, Inc. for outstanding service and many contributions to the industry; and the David P. Larsen

Award to *Jim Wordelman* of CTS Knights Company and *Bob Kinsman* of Motorola (retired) for engineering contributions to industry.



From left to right, Fred Walls, Mike Garvey, and Chris Ekstrom at a reception in the exhibit area.

President's Message

Summer 2000 was filled with travel which was both exhausting and exhilarating. One positive aspect was that it took Theresa and I away from the sizzling heat and rainless season of the Sonoran Desert where Phoenix is located. Phoenix has been our home since birth, and we are blessed by nine months of blue skies, warm days, and cool nights. It is refreshing to experience other climates in June, July, and August. The travel was primarily connected with our UFFC Society except for a two-week family reunion in Colorado and some vacation time before and after conferences.

In June the Frequency Control Symposium had its meeting in Kansas City with the Electronic Industry Associates (EIA). It combined an excellent technical program with a large room full of exhibitions. Don Sullivan of the UFFC-Society and Jack Kay of EIA were the symposium Co-Chairs. Similar

cooperative efforts with other groups are on tap for ultrasonics and ferroelectrics conferences in the near future. The following week a small group of representatives from each of our three entities met in Montreal, Canada for two days to check on the site and facilities for our 2004 Joint UFFC Symposium in celebration of 50 years of society activity. The Montreal Convention Center is the planned site for the dates of August 22-27, 2004. Mike Garvey is the General Chair and will be calling on members to help in organizing a successful gathering. If you have any suggestions for major plenary speakers, organization of the symposium, and things you want to see at the symposium, contact Mike at Rmgarvey@datum.com. This will be a great opportunity for the members of our three communities to fellowship and cross-link with each other's technologies. Each community will be bringing their own unique

features for the three parallel symposia. As the historical representative for the society, I am encouraging papers and memories be written between now and then for the Transactions, Newsletter, Website, and the 2004 Symposium.

In late July/early August the trade winds cooled us in Honolulu where the International Symposium in the Applications of Ferroelectrics held its conference. Dwight Viehland and Angus Kingon co-chaired this highly successful symposium with excellent student representation at the conference. There was time for fellowship, and at the luau, Ahmad Safari demonstrated his unrealized talent as a hula dancer.

The Ultrasonics Symposium is coming up in San Juan, Puerto Rico, in October. It will be a great conference in a historic setting. Thanks in advance to Rodolfo Almar, Peter Wright, and their respective committees for organizing a great symposium. Fair weather is promised.

In September the International Forum on Wave Electronics will be held in Russia. This will continue their tradition of a shipboard conference out of St. Petersburg that combines technical sessions with visits to historic Russian sites. There are also two other conferences occurring later this year in China, which are supported by our society. The 8th International Workshop on Modern Acoustics — NDE is in Nanjing and the second is in Hong Kong with the focus on ferroelectrics.

Very recently I was in Dallas for a TAB brain-storming strategic planning meeting involving the society presidents and other TAB members. It was very productive. At the start we developed a first draft set of core values from which critical issues, relationships, and mission statements were developed. Some of them bear repeating here, because I believe they also represent the core values of our society. I welcome comments

and additions on these from our members. These are the values written by the TAB Group:

- Ethical conduct and integrity in science and technology
- An active and vibrant global community of engineers and scientists
- The contributions that engineers and scientists make to society
- Networking, knowledge sharing, learning, and cooperation
- The nurturing of new and existing science and technology
- The creation and dissemination of high quality scientific and technical information
- Access to and exchange of engineering and scientific information that is affordable and barrier free
- The use of generated revenues for the benefit of the engineering and scientific community and ultimately for the benefit of society
- Honoring our technical achievements and heritage
- An administrative committee responsive and committed to the support of its members
- The promotion of cooperative efforts among society members and between constituent societies and councils

It is a list worthy of our consideration as the society moves forward.

Our society is a volunteer organization, and I continue to deeply appreciate all the work that our members do to keep the UFFC Society strong and viable. Your Administrative Committee continues to welcome suggestions for the improvement of our society. Talk to your elected and appointed AdCom members or e-mail them to your president at f.hickernell@ieee.org.

Fred S. Hickernell
UFFC-Society President

AdCom Briefs

The Administrative Committee (AdCom) meeting of the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S), held in conjunction with the 2000 International Symposium on the Application of Ferroelectrics (ISAF), Honolulu/HI, was called to order at 9:00 am, 29 July 2000, by Society President Fred S. Hickernell. F. Hickernell expressed his appreciation to the Ferroelectrics symposium organizing committee for hosting the meeting.

President F. S. Hickernell introduced and welcomed four newly-elected AdCom members: Lewis F. Brown (South Dakota State University), Michael M. Driscoll (Northrup Grumman Corp.), Thomas E. Parker (National Institute of Standards & Technology), and Clemens C. W. Ruppel (Siemens AG); and one newly appointed student representative, Ryan Ong (University of Illinois/Urbana).

The minutes of the 17 October 1999 UFFC-S AdCom meeting held in Lake Tahoe, Nevada, were approved as corrected.

Since the last AdCom meeting of 17 October 1999, two e-mail ballots have been cast. (1) In January, the annual Presidential appointments were ratified by the (12) elected Society AdCom

members. (2) In April, G. V. Blessing, Society Secretary/Treasurer, generated an e-mail message to AdCom voting members **to request your VOTE on the issue of UFFC Society monetary support, in the amount of \$5000, toward The 8th International Workshop on Modern Acoustics- NDE, to be held in Nanjing /China, 28-31 October 2000.** The Workshop co-chairs are Professor S.Y. Zhang (Nanjing) and Professor R.L. Thomas (Detroit, MI, USA). The action to provide monetary support was approved by a majority of the 22 respondents.

J. F. Greenleaf, Ultrasonics Committee Vice President, moved **to develop a WEB page accessible by AdCom members, to include AdCom minutes and attachments.** The motion was seconded by J. R. Vig, and the motion passed.

J. Brown, Publications Vice President, discussed the IEEE Electronic Library (IEL) which had its beginnings in 1988. The emphasis with this library is rapidly moving from a CD delivery medium to a WEB medium. IEEE discussions about the significant changes taking place revolve around archivability issues, who has access to what, intellectual property concerns, etc.

J. R. Vig, Jr. Past Society President, moved **to restrict sales of CD sets of UFFC-S Symposium Proceedings to UFFC-S**



Mike Driscoll, Ahmad Safari, Susan T-McK (hidden behind Safari), Steve Pilgrim, Angus Kingon (ISAF Gen'l Cochair), David Payne, Jim G, and Herm.

members. The motion was seconded by D. C. Malocha. After discussions that included identifying a price tag of \$30 per CD set, and noting that all members have access to the WEB version at no charge, the motion passed.

J. R. Vig moved to **press 1000 copies of CD sets of the UFFC-S Symposium Proceedings.** The motion was seconded by H. van de Vaart, and the motion passed.

H. van de Vaart, Society Finance Chair, moved that **other IEEE Societies have access to UFFC-S archival materials, on a reciprocal basis.** The motion was seconded by J. A. Kusters, and the motion passed.

J. Brown presented an overview of IEEE "Manuscript Central" which is a mechanism that the IEEE has put in place to handle electronic manuscript submittals to its journals, the subsequent peer-review process, etc. Discussion followed on its possible use for the UFFC-S *Transactions*.

J. Brown moved to **purchase a printed set of the IEEE Membership Directory for each of the UFFC-S Transactions Associate Editors.** The motion was seconded by J. R. Vig, and the motion passed. The Membership Directory includes close to 350,000 members in its listing. Presently there are 36 *Transactions* Associate Editors.

J. R. Vig reported that the archives digitization effort for the WEB is progressing. Included thus far are the Newsletter, the *Transactions*, symposia proceedings, and a number of books.

A. Safari, Society President-Elect, moved that Nara, Japan, be the site for the 2002 International Symposium on Applied Ferroelectrics (ISAF), with Prof. Tadashi Takenaka the general chair. The motion passed. Prof. David Payne will co-chair the Symposium.

A. Kingon, Co-Chair with D. Viehland for ISAF 2000, presented a thorough oral report detailing the work of the organizing committee in its effort to host a successful Symposium. To date there were 315 registrants.

J. A. Kusters, Frequency Control Committee Vice President, moved that Tampa Bay, Florida, be the site for the 2003 Frequency Control Symposium. The motion was seconded by J. Brown, and the motion passed. R. M. Garvey will chair the Symposium.

J. F. Greenleaf moved that Rotterdam, The Netherlands, and Dr. van der Steen be the venue and general chair for the Ultrasonics Symposium of 2005. The motion was seconded by H. F. Routh, and the motion passed.

J. A. Kusters that **R. Michael Garvey be the general chair for the UFFC-S 50th year anniversary combined symposia in Montreal, Canada, in 2004.** The motion was seconded by J. Brown, and the motion passed.

M. A. Breazeale, Distinguished Lecturer Committee Chair, delivered a written report. Each year the Society sponsors a new Distinguished Lecturer, drawn from the UFFC community, to represent the Society to a broad range of technical organizations including local Society Chapters, private and government laboratories, and universities. The position is sufficiently supported to enable the lecturer to travel nationally and

internationally in response to interested parties' requests. The period of service extends for 18 months, from 1 July until December 31 of the following year. The Committee is presently seeking a candidate for the tour period beginning 1 July 2001.

G. V. Blessing moved that present AdCom e-mail voting procedures (established 3 November 1996) be replaced by Sensors Council procedures (established 6 November 1999) as follows: "After a motion is proposed via E-mail, discussions will be held on-line (E-mail or bulletin board), by telephone, or otherwise. The time allowed for discussion shall be at the discretion of the President. E-mail voting will have three choices: Yes, No, and Hold (because some may feel that an item ought to be held for in-person votes). If more than 50% vote yes, the motion carries. If at least 50% vote No, the motion is defeated. If at least 50% vote No or Hold, the motion shall be tabled until the next AdCom Meeting." The motion was seconded by D. C. Malocha. The motion was subsequently withdrawn, and will be given further attention at a future AdCom meeting when the following three points will be considered: 1) a policy for disseminating the motion to the entire AdCom body (including non-voting members) for the discussion period, 2) the % Hold vote, and 3) defining a quorum. It was also pointed out that this balloting mechanism, when originally discussed in 1996, was intended for items that are urgent.

D. R. Pape, Society Membership/Chapters Chair, moved that attendance at AdCom meetings be subsidized by the Society for actual airfare costs plus two nights' hotel stay, upon request of the AdCom member. The motion was seconded by S. M. Pilgrim. After discussion that included an urging for a policy which would encourage due diligence on the part of the traveler to seek low-cost airfare, the motion failed. Further discussion is expected at a future AdCom meeting.



Student AdCom member Rian Ong, Lewis Brown, Don M, Helen Routh, Tom Cutchen, Fred, Gerry Blessing hidden, Tom Parker, Dwight Viehland (ISAF Gen'l Cochair), Jack Kusters, Bill O'Brien.

A. H. Meitzler, Standards Sub-committee Chair for Ferroelectrics, in a written submission made the motion: **Resolved - that a uniform policy be adopted for all IEEE UFFC Society-sponsored symposia, mandating reduced registration fees for retirees and zero registration fees for IEEE Life Members/Fellows, and that notice thereof be provided in the advance publicity releases of these symposia.** The motion was seconded by J. Brown. The motion was then amended to be **full-time retirees** in an effort to exclude those for whom "retirement" includes a remunerative position, etc. A discussion ensued whether Proceedings be included and meals excluded. Finally the motion was tabled until the next AdCom meeting, to be further discussed under "unfinished business."

A motion was made to **approve the 2001 UFFC-S budget, including the addition of two line items: (1) \$10K for the on-going digitization of the Transactions, and (2) \$15K for grants to foreign conferences.** The motion passed.

THE NEXT ADCOM MEETING will be held in conjunction with the International Ultrasonics Symposium 2000: *IUS 2000 - SAN JUAN, PUERTO RICO, 22 October 2000.*

The meeting was adjourned at 5:15 pm, 29 July 2000.

G. V. Blessing

UFFC-S Secretary/Treasurer

August 22, 2000

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society Administrative Committee

SOCIETY OFFICERS

President	F. S. Hickernell	Motorola (ret.)
President-Elect	A. Safari	Rutgers University
VP, Ferroelectrics	J. T. Cutchen	Sandia Labs.
VP, Frequency Control	J. A. Kusters	Agilent Co.
VP, Ultrasonics	J. F. Greenleaf	Mayo Clinic
VP, Publications	J. Brown	JB Consultants
Secretary-Treasurer	G. V. Blessing	National Institute of Standards & Technology

ELECTED COMMITTEE MEMBERS

1998 - 2000	T. R. Gururaja	Hewlett-Packard Company
1998 - 2000	D. B. Hauden	LPMO-CNRS
1998 - 2000	A. H. Meitzler	Ford Motor Co. (ret.)
1998 - 2000	K. Uchino	The Pennsylvania State University
1999 - 2001	S. M. Pilgrim	Alfred University
1999 - 2001	H. F. Routh	Advanced Technology Laboratory
1999 - 2001	S. E. Trolier-McKinstry	The Pennsylvania State University
1999 - 2001	M. Yamaguchi	Chiba University
2000 - 2002	L. F. Brown	South Dakota State University
2000 - 2002	M. M. Driscoll	Northrup Grumman Corp.
2000 - 2002	T. E. Parker	National Institute of Standards & Technology
2000 - 2002	C. C. W. Ruppel	Siemens AG

EX-OFFICIO COMMITTEE MEMBERS

Awards	R. Lerch	University of Erlangen
Fellows*	R. M. White	University of California, Berkeley
Finance	H. van de Vaart	VDV Associates
Historian*	F. S. Hickernell	Motorola (ret.)
Long Range Planning	D. C. Malocha	University of Central Florida, Orlando
Membership Services	D. R. Pape	Photonic Systems
Newsletter*	W. D. Hunt	Georgia Institute of Technology
Nominations	F. S. Foster	University of Toronto
Standards	A. Ballato	U. S. Army CECOM, Fort Monmouth
Transactions*	W. D. O'Brien, Jr.	University of Illinois, Urbana
Sr. Past President	D. C. Malocha (1998-2001)	University of Central Florida, Orlando
Junior Past President	J. R. Vig (2000-2003)	U. S. Army CECOM, Fort Monmouth
Student Member*	K. V. Morgan (1999-2000)	University of Virginia, Charlottesville

Jr. Student Member*

R. Ong (2000-2001)

University of Illinois, Urbana

IEEE HEADQUARTERS

Director, Division IX*

N. Khazenie

Managing Director, TAB*

M. Ward-Callan

General Manager, IEEE*

D. J. Senese

*Non-Voting Positions

July 23, 2000

Chapter Activities

Japan Chapter

The Japan Chapter held 6 technical meetings from January through August in 2000, in conjunction with the Technical Group on Ultrasonics of the Institute of Electronics, Information and Communication Engineers of Japan and the Acoustical Society of Japan:

Date	Papers	Venue
1) January 26-27, 2000	16	Kyoto
2) February 28, 2000	6	Yokohama
3) April 24, 2000	7	Tokyo
4) May 22, 2000	8	Tokyo
5) June 19, 2000	8	Tokyo
6) July 7, 2000	13	Tokyo

New Millennium Memorial Symposium on Piezoelectric Materials and Acoustic Wave Devices

The Japan Chapter cosponsored New Millennium Memorial Symposium on Piezoelectric Materials and Acoustic Wave Devices on February 22-23, 2000 at Tohoku University in Sendai, attended by 211 participants. There were 26 invited talks.

29th Symposium on Electromechanical Functional Devices

The 29th Symposium on Electromechanical Functional Devices (EM Symposium) was held at Chiba University in Chiba

on May 18-19, 2000, cosponsored by the Japan Chapter. The number of participants was about 150. One invited talk, one tutorial lecture and 20 contributed papers were presented.

Special Issue of JJAP on Ultrasonic Electronics

Most of the papers presented at the 20th Symposium on Ultrasonic Electronics (USE99) held on November 17-19, 1999 have been published in the special issue of Japanese Journal of Applied Physics, Vol.39, No.5B(2000). The articles in the special issue will be browsed by accessing the JJAP Online at <http://www.jjap.or.jp/online/>.

UFFC-S 2000-2001 Distinguished Lecturer Program

Dr. Errol EerNisse, the UFFC-S 2000-2001 Distinguished Lecturer, will be invited in Japan in November and is going to give lectures at the 21st Symposium on Ultrasonic Electronics (USE 2000) in Sendai on Nov. 7, at Schlumberger K.K. in Kanagawa on Nov. 9 and at Tokyo Metropolitan University on Nov. 10. For details see the IEEE UFFC Japan Chapter website at http://homepage1.nifty.com/ieeetokyo/soc/uffc_e.htm.

Sadayuki Takahashi
Vice Chair
UFFC-S Japan Chapter

UFFC Digital Archive Progress

Some of you are probably wondering about the progress of the UFFC Digital Archive project. It is proceeding though somewhat slower than originally anticipated. All of the documents have been scanned in and posted on the web and are available for browsing. The Archive consists of 90,000+ pages, including all the Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 1954 – 2000, Proceedings of the Annual Ultrasonics Symposia 1970 – 1999, Proceedings of the International Symposia on the Applications of Ferroelectrics, 1986, 1990 – 1998, and the Proceedings of the Annual Symposia on Frequency Control, 1956 – 1999. Ever wanted to look back at some of the original work in your field but never had access to an adequate library? Now is your chance. All of this available to you at www.ieee-uffc.org just because you are a UFFC member. If you have colleagues who are in the field but

not members, tell them about this. It may give them cause to join or re-join the organization.

Also available are a number of special issues such as the May 1976 issue of the Proceedings of the IEEE on Surface Acoustic Waves and the July 1991 Proceedings of the IEEE issue Time and Frequency Control. Also, there are numerous seminal texts available on-line. The vast majority of these are out-of-print and are very difficult to obtain by any other means. One can only browse the archive at the present time. An appropriate search engine is expected to accompany the archive later this year or early next year. A motion passed at last summer's AdCom meeting that the CD set of the Digital Archive will not be available to non-members at any price. The message is clear: JOIN OR DIE! Okay, maybe not die... maybe its more like JOIN OR

DON'T HAVE ACCESS TO THE UFFC DIGITAL ARCHIVE! But this is not nearly as pithy.

Kudos to John Vig and Jan Brown for working so closely with FASS to make this project a reality.

IEEE FELLOW NOMINATIONS

It is not too early to be thinking about Senior Members of the UFFC Society that you would like to nominate for the Fellow grade. Nominations will be due in March of 2001 and forms will be ready by November, 2000. To refresh your memory on the process it is described in the paragraphs that follow which focuses on the IEEE Fellow Committee and how it operates.

The IEEE Bylaws define the Fellow grade as one of unusual distinction in the profession, to be conferred only by initiation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in the IEEE designated fields, who has made important individual contributions to one or more of those fields. A nominee must be a Senior Member of the Institute and have been a member in any grade for at least five years prior to January 1 of the year of election.

The Fellow Committee, appointed by the Board of Directors, has the responsibility of making recommendations to the Board of Directors for nominees to be conferred the grade of Fellow.

The Fellow Committee acts as a guardian of IEEE Fellow grade standards and works carefully and faithfully to maintain these standards uniformly throughout the IEEE. The committee is concerned with determining whether the applicants meet the requirements of the IEEE Bylaws, and it seeks assistance from many sources in adjudicating the nominations.

The Fellow Committee depends upon the nominator of a candidate to furnish all of the basic necessary information requested on the nomination form and to point out the unique contributions of the candidate in a concise and succinct statement.

The Fellow Committee depends upon the society evaluations of the technical contributions of the candidates and their ranking of the candidates.

The Fellow Committee depends upon the Fellow grade references to comment on the candidate's specific NOMINATIONS achievements which they are qualified to judge.

The Fellow Committee will consider brief letters of endorsement from IEEE sections, chapters and committees.

In the processing by the Fellow Committee, the candidates' dossiers are evaluated on a basis of eight criteria:

1. Individual contributions as engineer, scientist, originator, technical leaders, or educator.
2. Evaluation by an IEEE society. Note that only one IEEE society evaluation is to be submitted for each candidate. The nominator is responsible for selecting the IEEE society that best reflects the candidate's field of technical accomplishments.
3. Tangible and verifiable evidence of technical accomplishments, such as technical publications, patents, reports, or published descriptions of products, facilities, and/or service.
4. Opinions of confidential Fellow references who are qualified to judge the work of the candidate (where possible, these should be associated with other than the candidate's own organization).
5. Service to IEEE and its predecessors, the AIEE or IRE.
6. Professional engineering service other than the IEEE.
7. Opinions of endorsers.
8. Total years in the profession.

Having considered all of the valuable information supplied from these many sources, a consensus of committee judgments is reached on the nominees to be recommended to the Board of Directors for evaluation to the IEEE Fellow grade, taking into account the maximum number of recommendations permitted by the IEEE Bylaws which can be submitted annually.

If you are interested in nominating one of our UFFC Society members you may obtain the necessary forms from Joann Kilyk, IEEE Fellow Committee, 445 Hoes Lane, Piscataway, NJ 08854, (732) 562-3843.



Ultrasonics, Ferroelectrics
and Frequency Control Society



The 2001 IEEE/EIA International Frequency Control Symposium and Exhibition



Tutorials on 5 June, Symposium 6-8 June 2001
The Sheraton Seattle Hotel and Towers, Seattle, Washington, U.S.A.

*Co-Sponsored by The IEEE Ultrasonics, Ferroelectrics & Frequency Control Society
and the EIA Electronic Components, Assemblies, and Materials Association*

FINAL CALL FOR PAPERS

Deadline for Submission: December 15, 2000

The 55th consecutive meeting of the Frequency Control Symposium will be held at The Sheraton Seattle Hotel and Towers, Seattle, Washington, USA. This Symposium is the leading international technical forum for research and development directed towards frequency control, precision timekeeping, and resonant sensors.

Authors are invited to submit papers dealing with recent and original work of interest to the frequency control community in the following subject categories:

Group 1

- A. Fundamental Properties of Materials**
- B. Theory and Design of Resonators and Filters**

Group 2

- A. Oscillators - BAW and SAW**
- B. Oscillators - Microwave to Optical**
- C. Synthesizers and Other Circuitry**
- D. Noise Phenomena and Aging**

Group 3

- A. Atomic Frequency Standards**
- B. Frequency and Time Coordination**
- C. Measurements and Specifications**
- D. Applications of Frequency Control**
- E. Optical Frequency Standards**

Group 4

- A. Resonant Chemical Sensors**
- B. Resonant Physical Sensors**
- C. BAW, SAW Sensors**
- D. Transducers**

Group 5

- A. Manufacturing Technology**

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Overland Park, KS 66213
913-685-3685
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kayinc@gvi.net

Additional information concerning the 2001 IEEE/EIA International Frequency Control Symposium and Exposition can be found at the web site <http://www.ieee-uffc.org/fc>.

Local Environment

This year's symposium will be held at *The Sheraton Hotel and Towers, Seattle, Washington, U.S.A.*, located in the heart of downtown Seattle. Called the Emerald City, Seattle has steep hills, lush greenery, and glimpses of water everywhere – Puget Sound, bays, lakes, rivers, and canals. Standing tall in the distance and adding to the viewing magic is snow-capped Mt. Rainier. The mountains shield Seattle, so the climate is mild year around. Normal June temperatures are highs of 69° F and lows of 53° F. Bring a sweater.

The lively downtown district of Seattle abounds with department stores, specialty shops, renovated historic theaters, espresso stands, restaurants and unexpected shopping experiences. City Centre's atrium includes a dazzling display of art glass from the internationally known Pilchuck School. The new Nordstrom flagship store is a brilliant counterpoint to Pacific Place, an upscale retail, dining, and entertainment complex in the adjoining block. "Hammering Man," a mammoth sculpture, stands guard at the entrance to the Seattle Art Museum, a striking post-modern structure exhibiting art from Africa and Native American Northwest art, as well as world-wide traveling exhibits. The Pike Place Market, next to the Sheraton Hotel and Towers, is the soul of Seattle, the oldest continually operating farmers market in the country. It is a free-form funhouse of sights, smells, sounds, and characters. Countless eateries cook up tastes of the world and the original Starbucks coffee store still dispenses espresso drinks.

Seattle's Waterfront was the last stop in the States for prospectors heading north to Alaska. Saltwater and sea air evoke voyages and adventures. Bright lights and colorful banners, clanging bells on restored streetcars, ferry horns echoing off downtown skyscrapers, enticing aromas of salmon, crab and sourdough. Sailing adventures begin on the Waterfront. Washington State Ferries depart from Pier 52, offering rides of an easy half-hour to Winslow on Bainbridge Island, or an hour to Bremerton with its Puget Sound Naval Shipyard and its historic Navy ships.

Conference attendees are requested to make their own reservations. Information regarding hotel accommodations will be available in the Advanced Program, which will be mailed out in early April, 2001.

Award Nominations

Formal nominations and suggestions of deserving nominees for the IEEE/UFFC Cady, Rabi and Sawyer Awards should be sent to the IEEE/UFFC Awards Chairman, Charles Adams. Formal nominations and suggestions of deserving nominees for the EIA/ECA Larsen and Staudte Memorial Awards should be sent to the EIA/ECA Piezoelectric Devices Division Chairman, Jack Kay.

Exhibits

For information on arranging for exhibit space, or for general conference information please contact:

Mr. Pete Walsh
EIA/ECA
2500 Wilson Blvd.
Arlington, VA 22201-3834
Tel: 703/907-7547 Fax: 703/907-7549
E-mail: pwalsh@eia.org

The deadline for arrangements is: 6 April 2001

Tutorial Information

On Tuesday, 5 June 2001, there will be a series of tutorials covering a wide range of related topics. The tutorials include both the fundamental topics of frequency and timing at a level suitable for practitioners new to the field, and more advanced and specialized topics related to specific areas. As such, the tutorials aim at providing useful knowledge to the beginners in the community, as well as those with extensive experience. Additional information will follow in the Advanced Program.

Travel Support

Student authors/co-authors - Limited funds are available to support the travel of student authors (from anywhere). Requests must be included with the summary and clearly marked as student travel. Recipients of student travel support will be notified by March 30, 2001. Questions should be directed to Lute Maleki (see front page for address and phone number).

NOTICE

Because of increasing postage costs and improved efficiencies of electronic transmission, future Call for Papers and Preliminary Programs will be sent to our mailing lists electronically. If you wish to remain on our mailing lists you **must** send your e-mail address to Mcgivneyb2@aol.com

Future UFFC-S Symposia

FREQUENCY CONTROL SYMPOSIA

2001 Frequency Control Symposium

Dates: June 5 (Tutorials)
June 6-8, Symposium Sessions

Place: Seattle, WA, USA

Facility: Sheraton Seattle Hotel and Towers
1400 Sixth Ave.
Seattle, WA 98101, USA
206 621 9000

General Chair: Errol EerNisse
Quartzdyne, Inc.
1020 Atherton Dr., Bldg. C
Salt Lake City, UT 84123, USA
801 266 6958 Ext. 423
E.Eernisse@ieee.org

Program Chair: John Prestage
Jet Propulsion Lab
4800 Oak Grove Dr.
298-105 B MS
Pasadena CA 91109, USA
818 354 3515
John.D.Prestage@jpl.nasa.gov

2002 Frequency Control Symposium

Location: Hilton New Orleans Riverside
New Orleans, LA, USA

Dates: 29-31 May; Tutorials on 1 June 2002

General Chair: Errol EerNisse
Quartzdyne, Inc.
1020 Atherton Dr., Bldg. C
Salt Lake City, UT 84123, USA
E.Eernisse@ieee.org

Program Chair: John R. Vig
US Army CECOM
Attn: AMSEL-RD-C2-PT
Ft. Monmouth, NJ 07703, USA
J.Vig@ieee.org

2003 Frequency Control Symposium

Location: Marriott Waterside
Tampa, FLA, USA

Dates: Tutorials: May 3 (Sunday);
Technical sessions: May 4-8 (Mon-Thur)

General Chair: R. Michael Garvey
Datum, Beverly
34 Tozer Road
Beverly, MA 01915-5510, USA
rmgarvey@datum.com

Program Chair: Christopher Ekstrom
US Naval Observatory
34th and Massachusetts Ave.

Washington, DC 20392-5100
ekstrom@atom.usno.navy.mil

ULTRASONICS SYMPOSIUM

2000 IEEE International Ultrasonics Symposium <http://www.uffcsymp2000.org/>

Place: Caribe Hilton - San Juan - Puerto Rico

Dates: October 22-25, 2000

General Chair: Rodolfo Almar
Phone: 407 290 9552
FAX: 407 290 5181
rcalmar@bellsouth.net

Program Chair: Peter Wright
Thomson Microsonics
Phone: 33 (0)4 92 96 35 07
FAX: 33 (0)4 92 96 31 90
peter.wright@tmx.thomson-csf.com or
peter.wright@libertysurf.fr

A Joint Meeting with the World Congress on Ultrasonics <http://www.ieee-uffc.org/2001/>

Place: Atlanta, Georgia, USA

Dates: October 7-10, 2001

General Chair: Mack A. Breazeale
University of Mississippi
National Center for Physical Acoustics
University, MS 38677
Phone: (662)232-7490
FAX: (662)232-7494
E-mail: breazeal@olemiss.edu

General Chair: William D. O'Brien, Jr.
Department of Electrical and
Computer Engineering
University of Illinois
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WCU Chair: Lawrence A. Crum
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Program Chair: Jian-yu Lu,
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Phone: (419)530-8079
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Fax: +49 (9131) 302951
E-mail: krs@lse.e-technik.uni-erlangen.de

Program Co-Chair: Robert Weigel
Universitaet Linz
Institut fuer Nachrichtentechnik/
Informationstechnik
Altenbergerstr. 69
A-4040 Linz, Austria
Phone: +43-732-2468-9710 (-11)
Fax: +43-732-2468-9712
weigel@mechatronik.uni-linz.ac.at

**2002 IEEE International Ultrasonics Symposium In
cooperation with the Association for Electrical,
Electronic & Information Technologies (VDE), Germany**

Location: Forum Hotel, Munich, Germany

Dates: October 8-11, 2002

General Co-Chair: Helmut Ermert
Ruhr-Universitaet Bochum
Dept. of. Electrical Engineering
Bldg. IC 6/132
D-44780 Bochum, Germany
Phone: +49 (234) 3222842
FAX: +49 (234) 3214167
E-mail: h.ermert@ieee.org

General Co-Chair: Bernhard R. Tittmann
210 Hallowell Building
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University Park, PA 16802
Phone (814) 865-7827
Fax (814) 863-7967
E-Mail BRTESM@ENGR.PSU.EDU

Program Co-Chair: Reinhard Lerch
Universitaet Erlangen-Nuremberg
Lehrstuhl fuer Sensorik
Cauerstr. 9
D-91058 Erlangen, Germany
Tel.: +49 (9131) 85 27223

2003 IEEE International Ultrasonics Symposium

Location: Honolulu, Hawaii
General Co-Chair: William D. O'Brien, Jr.
University of Illinois
Department of Electrical &
Computer Engineering
Bioacoustics Research Laboratory
405 North Mathews Avenue
Urbana, Illinois 61801-2991, USA
Phone: (217) 333-2407
Fax: (217) 244-0105
Email: wdo@uiuc.edu

General Co-Chair: James F. Greenleaf
Mayo Clinic
Ultrasound Research
200 First Street SW
Rochester, Minnesota 55905, USA
Phone: (507) 284-8496
Fax: (507) 266-0631
Email: jfg@mayo.edu

Nominations for UFFC-S DISTINGUISHED SERVICE AWARD

The Distinguished Service Award is a new award created by AdCom to recognize long-term support of the Society's activities. The first Award was presented in 1997. Recognition is given to those who innovate new Society programs, administer major Committees, manage Society functions, or promote the Society's areas of technical interest to the larger community. The recipient usually has served for many years with sustained participation in the Society's management. Selection is made by the Officers and the Awards Committee. Nominations may be submitted at any time. Who is the person you would like to honor in this way?

Photocopy this section and send via FAX or mail:
(You may submit more than one if you wish.)

Suggestions for the next **Distinguished Service Award**:

Your Name/Address: _____

Send at anytime to: Prof. Dr.-Ing Reinhard Lerch
Chair, UFFC-S Awards Committee
Department for Sensortechnology
Paul-Gordan-Str. 3/5
D-91052 Erlangen
Germany
FAX: +49-9131/85-23133
Email: r.lerch@ieee.org

Nominations for DISTINGUISHED LECTURER AND/OR TOPIC

The UFFC-S Distinguished Lecturer is welcomed by organizations around the world to present an up-to-date review of new developments in ultrasonics, ferro-electrics, or frequency control. The Distinguished Lecturer represents the Society to the larger technical community, and stimulates interest in the Society's professional areas. Recent lecturers have spoken to local chapters, universities and companies throughout North America, Japan, Europe, China, and South America.

Which topics would you like to hear? Which member would give a stimulating lecture? Fresh ideas are always welcome. Nominations may be submitted at any time. Be heard by filling out the attached form.

Photocopy this section and send via FAX or mail:
(You may submit more than one if you wish.)

Suggestions for the next **Distinguished Lecturer and/or Topic**:

Your Name/Address: _____

Send at anytime to:

Prof. Mack A. Breazeale
Chair, UFFC-S Distinguished Lecturer
Subcommittee
The National Center for Physical Acoustics
University of Mississippi
University, MS 38677
Tel: (601) 232-7490
FAX: (601) 232-7494

Russian Conference Arrangements

The Opening Ceremony of the Meeting, First Plenary Session and First Poster Session will take place on 14 September, 2000 at 10 a.m. in one of the Historical Russian Buildings located in downtown St. Petersburg. Then the Forum departs by ship from the landing stage "Rechnoi Vokzal" on the 14 September 2000 in the evening and sails from St. Petersburg to the Archipelago of Valaam and the landing stage of Mandroga on the Svir River returning to St. Petersburg in the early morning on 18 September 2000.

The ship will sail along the Neva River to the Lake of Ladoga and then to its Northern Part with a stop at the picturesque archipelago of Valaam. The attendees will have there



the sightseeing tour visiting the magnificent wooden churches and chapels and the famous monastery.

The ship will then cruise along the Svir River to the mooring place of Mandroga. This place of wooden architecture is a new attempt at reconstructing an old rich Russian village with a quarter of trades – and craftsmen, carved decorations on the houses etc.

Departing from Mandroga the Forum arrives to St. Petersburg.

All Forum attendees will be housed in cabins from 14 September till 18 September on board the ship and served breakfast, lunch and dinner meals in the ship's dining hall. A lounge offers evening entertainment.

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society

Standards Activities Committee

Dr. Arthur Ballato, Chairman
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The Standards Activities Committee consists of the chairman and the heads of the individual subcommittees.

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Time and Frequency Subcommittee and Standards Coordinating Committee SCC-27 (Std 1139-1988 & P1193)

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Standards Activities Committee

Standards Activities Report

1. Our society is currently responsible for nine items, eight standards and one project.

2. Ferroelectrics - A. H. Meitzler (180-1986)

Work on the development of a ferroelectric standard to replace ANSI/IEEE Std 180-1986 (withdrawn) is progressing very well. The latest draft version (#9) of the replacement standard is posted at <http://www.mrl.psu.edu/Faculty/trolrier-mckinstry.html>, and hyperlinked to the IEEE-UFFC Ferroelectrics website.*

* After the ferroelectrics draft standard was posted on the website, Susan Trolrier-McKinstry, the Vice-Chair and Secretary of the Ferroelectric Standards Subcommittee, was contacted by a representative of IEEE Standards Activities who objected to the public posting of the draft standard. The concern of the headquarters representative appears to be that, when posted this way, the intellectual property represented by the standard is not protected by any IEEE copyright. One might also imagine concern originating from the fact that posting the intellectual property of unpaid volunteers (us) threatens the job security of paid staffers (them). Be that as it may,

the UFFC AdCom should probably consider again the question of whether or not it wants to support the publicly-accessible posting of standards while still in the draft state of development.

3. Time and Frequency - E. Ferrè-Pikal (1139-1988 and 1193-1994; J. R. Vig SCC-27 liaison)

SCC-27 has begun revision of 1139-1988, "Guide for Measurement of Environmental Sensitivities for Standard Frequency Generators." It is expected that the review process will take several years for completion.

4. Loss in Acoustic Materials - S. Sherrit

This is a newly created subcommittee, headed by Stewart Sherrit of JPL, to look into increasingly important (and highly charged) issues of material loss in acoustic materials. Members include: Amin (NUWC), Cain (NPL), Damjanovic (EPFL), Leary (JPL), Meeker, Metcalfe (Morgan Matroc), Mukherjee (RMC), Pappalardo (U Rome), Robinson (NUWC), Smith, Smits (BU), Uchino (PSU), and Viehland (NUWC). A first, incomplete, draft has been prepared and distributed to members. A meeting is planned for the Ultrasonics meeting in Puerto Rico.

5. Surface Acoustic Wave Devices - P. Dufilie (1037-1992)

Pierre Dufilie (Thomson Components) has been appointed to head this group, and is assembling the subcommittee.

6. Piezoelectric Crystals – W. P. Hanson (176-1987 and 177-1966)

No report was received for this interval. Revision of Standard 176 [Piezoelectricity] is the main objective of future work.

7. Sensors, Actuators, & Transducers - R. M. Lec and S. J. Martin (P1182)

This subcommittee is responsible for: "IEEE Guide to Terms and Definitions of Ferroelectric, Frequency Control, and Ultrasonic Sensors." The subcommittee has been inactive during the last reporting period. John Vig was elected President of the IEEE Sensors Council. The UFFC representatives are S. Martin and R. Lerch.

8. Piezomagnetic Technology - S. L. Ehrlich (319-1990)

Standard 319 has been withdrawn. The subcommittee has been inactive during the last reporting period, but it is planned to post corrections to 319 on the UFFC website.

9. Ultrasonics in Medicine - (790-1989)

Currently inactive.

ARTHUR BALLATO
Chairman, Standards Activities
Ultrasonics, Ferroelectrics, and
Frequency Control Society

ISAF 2000

A number of award presentations were made at ISAF 2000. Two Ferroelectric Recognition Awards were presented under the auspices of UFFC-S. This awards recognizes for outstanding contributions to, or technical achievements in, the field of ferroelectrics and/or service to the ferroelectric community.

The awardees were Dr. Ahmad Safari and Dr. Rainer Waser.

Prof. Ahmad Safari was cited for his technical accomplishments in the field of ferroelectric materials and piezoelectric composites and for his leadership within the society which has resulted in an increasingly international and integrated ferroelectric community. Prof. Waser was cited for his work on defect chemistry in perovskites leading to

improved performance and devices and for his leadership within the international ferroelectric community.

At a higher level of honor, three Third IEEE Millennium Medals were presented at the ISAF. Only 3000 medallists were chosen from among the ~360,000 IEEE members. Nine awardees are affiliated with UFFC-S and three with ferroelectrics. Medal awardees at ISAF were:

Professor Leslie Eric Cross
Professor Robert E. Newnham
Dr. Wallace A. Smith.

Each awardee has made such substantial contributions that you are encouraged to check the literature to appreciate their contributions fully. Much of ferroelectrics research worldwide has some relation to the work of these three individuals.

- The Millennium Medal was designed by Gladys Gunzer, world renowned sculptor.
- The design of the medal includes a world map symbolizing the global nature of the IEEE and the words "In celebration of the Third Millennium".



The Time and Frequency Control Community Loses One of its Pioneers and Leaders, Helmut Hellwig.

The time and frequency control community lost one of its leaders on July 22, 2000 when Helmut Hellwig passed away. Helmut made many scientific and management contributions to our field and he will be missed by his many friends and colleagues.

Helmut Hellwig was born on May 7, 1938 in Berlin, Germany. His professional education in Germany included a 1963 Master of Science degree in physics and a 1966 Doctorate in electrical engineering, both from the Technical University of Berlin. During that period Helmut was a Researcher at the Heinrich Hertz Institute in Berlin. He immigrated to the United States in 1966 and became a U.S. citizen in 1972.

Dr. Hellwig was a research physicist in the field of atomic frequency standards for the U.S. Army Electronics Command in Ft. Monmouth, NJ between 1966 and 1969, and a Time and Frequency Division Research Physicist, Section Chief and Associate Division Chief at the National Bureau of Standards (NBS) in Boulder, CO between 1969-1979. While there, Helmut established an organizational culture of advanced research in the field of atomic clocks which persists to this day.

In 1979, Helmut became the President of Frequency and Time Systems, Inc. (FTS, now part of Datum, Inc.), a research and manufacturing company in Beverly, MA. He led the successful qualification and production of satellite cesium clocks for the Global Positioning System (GPS).

In 1986, Helmut returned to NBS as Associate Director. Then, in 1990 he was appointed Director of the Air Force Office of Scientific Research, Bolling Air Force Base, DC, where he was responsible for managing the entire basic research program of the U.S. Air Force. He built a strong research infrastructure carried out by approximately 6,000 researchers in Air Force Laboratories, universities and industries.

In 1996, Helmut was appointed Deputy Assistant Secretary for Science, Technology and Engineering, Office of the Secretary of the Air Force (Acquisition) in Arlington, VA. In that position, he was responsible for all Air Force investments in science and technology. Helmut retired from this position in 1999.

He was a Fellow of the IEEE, a Member of the American Physical Society and Sigma Xi. He was also a member of the International Scientific Radio Union (URSI), the International Radio Consultative Committee (CCIR) and the International Astronomical Union (IAU).

Helmut was very active in IEEE and frequency control committees, including the I&M and UFFC Societies. He was an Associate Editor of the Transactions on UFFC, Chairman of the I&M Technical Committee on Time and Frequency, and a member of the PTI Executive Committee. He has also organized or co-organized numerous national and international conferences.

He was granted several patents in the field of atomic frequency standards, and published about 100 technical and scientific articles and papers.

Helmut received a number of professional awards, including an honorary doctorate from the University of Besancon, France in 1989 for his work on atomic frequency standards, and a 1996 Air Force Senior Executive Service, Presidential Rank Award for exceptional performance over an extended period of time. He was also the recipient of the E.U. Condon Award, the IR-100 award and the United States Army Science Award.

Helmut is survived by his wife Thekla, his two sons Frank and Peter, and two granddaughters.

Donations may be made in Helmut Hellwig's name to RICA, a facility for children and adolescents with severe emotional disabilities at 15000 Broschart Road, Rockville MD 20850.



The 20 Greatest Engineering Achievements of the 20th Century

Include 13 from IEEE technologies.

1. **Electrification** 2. Automobile 3. Airplane 4. Safe and abundant water 5. **Electronics** 6. **Radio and Television**
7. Agricultural Mechanization 8. **Computers** 9. **Telephone** 10. **Air Conditioning and Refrigeration**
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15. **Household Appliances** 16. **Health Technologies** 17. Petroleum and Gas Technologies
18. **Laser and Fiber Optics** 19. **Nuclear Technologies** 20. High-Performance Materials



"If anything shines as an example of how engineering has changed the world during the 20th century, it is clearly the power that we use in our homes and businesses. What I really hoped to do was shamelessly use this occasion to remind you of the breadth, and the depth, and the importance of engineering as a whole to human existence, human progress, and human happiness."

- NEIL ARMSTRONG, Astronaut & Engineer
National Press Club, Washington, DC, 22 February 2000



IEEE Sensors Journal

**New for
2001!**

The **IEEE Sensors Journal**, a print and electronic journal to be published bimonthly beginning in June 2001, will be a fully-refereed publication with an online peer review system and electronic submission of papers. **IEEE Sensors Journal** covers the theory, design, fabrication and application of devices for sensing and transducing physical, chemical, and biological phenomena. With an emphasis on the application of sensors and focusing on the electronics and physics aspects of sensors and integrated sensor-actuators, **IEEE Sensors Journal** will cover the numerous sensor technologies spanned by the IEEE as well as emerging sensor technologies.



an affordable information exchange. And it's important that the papers be rapidly peer-reviewed and available online," said Vig.

Endorsed by SPARC

SPARC (the Scholarly Publishing and Academic Resources Coalition) has announced its collaboration with IEEE to produce the **IEEE Sensors Journal**. "IEEE is a high-quality non-profit publisher that's well prepared to bring a low cost alternative to market," said Rick Johnson, SPARC Enterprise Director. "Moreover, they have an impressive record of publishing economical, high-impact journals. Their average institutional subscription price is about half that of all engineering titles."

Publish in a Journal You Can Afford!

Professor Vladimir Lumelsky of the University of Wisconsin, who is currently on sabbatical at the National Science Foundation, was recently named Editor-in-Chief of **IEEE Sensors Journal**. "With 37 review paper commitments for the inaugural issue by the top names in the sensor field, we are well on our way toward our goal of publishing a journal of the highest quality," said John Vig, President of the IEEE Sensors Council. "We want to provide a place where the best authors can publish in a journal they and their libraries can afford. It is imperative that the major players in this evolving technology create a forum for

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For further information, please see: <http://www.ieee.org/sensors>. For ordering information, please see reverse.

**Also New
for 2001!**

IEEE Transactions on Device and Materials Reliability

This new publication will provide in-depth analysis of the measurement and understanding of the reliability of electronic materials and devices at each phase, from concept through research and development and into manufacturing scale-up. Available solely online, the scope of this publication includes the reliability of Devices, Materials, Processes, Interfaces, Integrated Microsystems, Transistors, Integrated Circuits, and Thin Film Transistor Applications.

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Editor's Note:

As usual I would like to thank my colleagues who have contributed to this issue of the newsletter. This is truly a group effort. The Digital Archive is coming along, albeit a bit slower than originally anticipated. The principle transactions of the society along with the conference proceedings are available for browsing with an appropriate search engine slated for later this year or early next year. One of the key benefits of UFFC membership is being able to feast on the Digital Archive which also includes numerous seminal but largely out-of-print texts of our technical area.

Former UFFC President John Vig has served as the President of the IEEE Sensors Council and has helped launch a new

publication, the IEEE Sensor Journal. An interesting procedural feature of this journal is that papers will be peer-reviewed online. This should cut the submission to publication time to an absolute minimum.

We are saddened by the passing of Helmut Hellwig, one of the pioneers in Frequency Control and a former member of AdCom. We wish his family well in dealing with the loss.

William Hunt
Editor
UFFC Newsletter



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