



## ***AUTOMATIC RF TECHNIQUES GROUP***

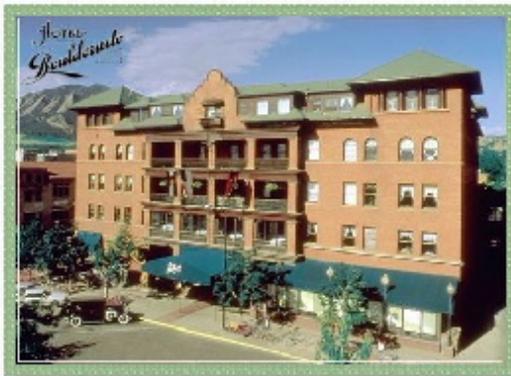
### **CONFERENCE NEWSLETTER**

**Winter 2003 Edition**

**NUMBER 30**

## **The 62<sup>nd</sup> Conference** *Differential Measurements*

### **OVERVIEW**



Boulder, CO provided a very enjoyable setting for the 62<sup>nd</sup> ARFTG conference, held on December 4<sup>th</sup> and 5<sup>th</sup>. This conference offered a two-day technical program. A complete listing of the papers presented is available in the conference digest and also on the ARFTG website at [www.arftg.org](http://www.arftg.org). Conference Chair Dylan Williams and Technical Program Chair Kate Remley put forth considerable effort to ensure an outstanding conference.

### **SHORT COURSE**

The 10th annual NIST/ARFTG Microwave Measurements Short Course was given on December 2<sup>nd</sup> and 3<sup>rd</sup> at the Boulderado Hotel in Boulder, CO. This one and a half day course offers an excellent introduction for those new to the field or a review for those who wish to expand their knowledge on a wide variety of topics germane to high frequency measurements. The course material included: microwave measurements overview; circuit theory; vector network analysis, RF and microwave

interconnects, power, noise, digital modulation, time domain, wideband radio link modeling, simulation, and measurement. The course organizers and instructors put forth considerable effort in keeping the presentations fresh and up-to-date. The first day of course focused on RF and Microwave measurement basics, while the second day was tailored to the conference theme. The author benefited greatly when he took the course last year. Additional short course information is available on our website at [www.arftg.org](http://www.arftg.org) or by contacting the ARFTG Short Course Director, David Walker, [dwalker@boulder.nist.gov](mailto:dwalker@boulder.nist.gov).

### **Nonlinear Measurement Workshop**



The 3rd Nonlinear Measurement Workshop was also held at the Boulderado Hotel on the afternoon of December 3<sup>rd</sup>. The workshop covered recent developments in Load-Pull measurements, nonlinear network analysis, and prediction of system parameters from nonlinear measurements. Workshop Organizer Juan Carlos Pedro did a great job and we all are looking forward to attending the next workshop in the Fall of 2004.

### LSNA Users' Forum

The 3rd annual meeting of the LSNA Users' Forum was held Wednesday evening December 3<sup>rd</sup>. This informal discussion group is devoted to sharing information and issues related to instrumentation utilized in vector large signal network analysis of microwave circuits and systems that contain nonlinear elements. Over 30 people attended, and participation was high in the three moderated

discussions: "Are current LSNA hardware set-ups adequate to support the needs of behavioral modeling techniques?", moderated by Dominique Schreurs of the KU Leuven; "Software: What do users want their LSNA (MTA,...) control software to do?", moderated by Wendy Van Moer of the Vrije Universiteit Brussel; and "Names for the class of instrumentation and for the Users' Forum itself.", moderated by Kate Remley of NIST. See the ARFTG web site for summaries of these discussions. Dominique, Kate, and Wendy will organize the next Users' Forum at the IMS conference in June. Please send them your suggestions!

### TECHNICAL SESSIONS



The technical sessions were held December 4<sup>th</sup> and 5<sup>th</sup> at the Boulderado Hotel, Boulder, CO. These sessions discussed the conference theme as well as a number of other diverse topics of common interest. Technical Program Chairs Kate Remley and Dylan Williams assembled an interesting program consisting of 37 papers, a record for the Fall conference. Topics included: Differential Measurements, Temporal Measurements, for 40 GB/s Systems, Nonlinear measurements, Circuit and Device Models, VNA Calibrations, and Measurement Accuracy. Selected by the conference attendees as the Best Technical Paper was "Over Determined Calibration Schemes for RF Network Analysers Employing Generalised Distance Regression", presented by Nick Ridler of the NPL, UK. Selected as Best Poster Session was "Repeatability Study of Commercial Harmonic

Phase Standards" presented by Jeff Jargon of NIST. Selected as Best exhibitor was Maury Microwave.

### EXHIBITS

The exhibits area at an ARFTG Conference provides attendees with an opportunity to view newly developed products and to have in depth discussions with suppliers about their test and measurement problems and needs. For additional information please contact Exhibits Chair Leonard Hayden, [leonard@cmicro.com](mailto:leonard@cmicro.com).

### CD-ROM, DIGESTS & COURSE NOTES

Available for purchase are printed digests and course notes from this and previous conferences. Also the collected ARFTG Digests for 1982-2001 conferences are for sale on CD-ROM. For additional information, visit our website at [www.arftg.org](http://www.arftg.org) or contact Jim Taylor, the ARFTG Executive Secretary, [jtaylor@blitz-it.net](mailto:jtaylor@blitz-it.net).

### AWARDS BANQUET



The awards banquet was held at the Nabil's Mediterranean Restaurant, Boulder, CO. The evening included sparkling conversation, good food, and an intimate atmosphere. President Chip Wilker presented the following awards:

*ARFTG Service Award*

Kate Remley

*ARFTG Distinguished Award*

Robert Judish

*ARFTG Technology Awards*

Robert Judish and John Gregory Burns

*Best Paper 61<sup>st</sup> Conference*

Kate Remley

*Best Interactive Session 61<sup>st</sup> Conference*

Dylan Williams

*Best Exhibitor 61<sup>st</sup> Conference*

Maury Microwave

*Conference Chair 62<sup>nd</sup> Conference*

Dylan Williams

## CHECK YOUR MEMBERSHIP STATUS

Please check the address label attached to this mailing. It indicates your membership status as either "Member in Good Standing", "Expiring", or "Non-member". You receive membership credit for each ARFTG Course or Conference you attend or you may send \$25 to renew your membership to:  
ARFTG PO Box 228, Rome, NY 13442-0228..

## Ask a Metrologist



The 62<sup>nd</sup> ARFTG Conference also included the popular "Ask A Metrologist" on December 5<sup>th</sup> in the NIST Laboratories Boulder, Colorado. It was an informal time to discuss measurements and measurement techniques with leaders in their respective fields in the NIST facilities where they work.

## MEASUREMENT COMPARISON PROGRAM



The ARFTG Measurement Comparison Program allows participating laboratories to compare their measurements on the ARFTG standards kits to those obtained from other laboratories. Given the increasing emphasis on measurement assurance, this program provides a valuable, cost-effective method for validating the participant's measurement capability.

This program is not intended to provide an uncertainty analysis but should give the participants more confidence in their measurement capability and assist in identifying measurement deficiencies. Data obtained from the participating labs are sent to NIST where the results are added to a database and a report is sent to the customer. The following are a list of available MCP kits and their respective coordinators.

Connector	Contact
7/16	Greg Burns, Northrup Grumman
Type N	John Cable, Honeywell
7 mm	Brian Lee, Agilent Technologies
3.5 mm	Phil Yates, JPL
Type K, 2.92 mm	Ron Guzman, Anritsu
2.4 mm	Ken Wong, Agilent Technologies

For more information or to obtain a signup sheet visit our website at [www.arftg.org](http://www.arftg.org) or contact John Cable [jcable@kcp.com](mailto:jcable@kcp.com).

## MICROWAVE MEASUREMENT STUDENT FELLOWSHIP

ARFTG has an ongoing Microwave Measurement Student Fellowship Program. The purpose of this fellowship is to recognize and provide financial assistance to graduate students who show promise and interest in pursuing research related to improvement of radio frequency and microwave measurement techniques. One or more awards, of up to \$5000, may be granted each year, based on available funding and on the number and quality of applications received.

Applicants must be enrolled as a full-time student at a suitably qualified institution of higher learning. Applicants must be carrying out research as part of the degree program, rather than just taking course work. The proposed research project must clearly involve RF/microwave measurements and be supervised by a full-time faculty member. The faculty advisor or supervisor must be an ARFTG member or the proposal must be sponsored by an ARFTG member.

The Executive Committee approved the award of two Fellowship Awards. These Fellowship awards were presented to Giovanni Loglio of University of Florence, Italy and Charles Baylis of University of South Florida. Additionally, ARFTG has initiated a Student Stipend for full time students who present a paper at an ARFTG conference. These were available to: Michael McKinley, Georgia Tech; Jiarui Lina and Wenhua Dai, Ohio State University; Jayesh Nath, North Carolina State University; Koocho Jung, University of Florida; Balaji Lakshminarayanan, University of South Florida;

Selcuk Helhel, S Demirel University of Turkey; Karel Hoffmann and Vratislav Sokol, Czech Technical University in Prague; and Dean Rabijns, Vrije Univrsiteit Brussel.

For more information visit our website at [www.arftg.org](http://www.arftg.org) or contact Jeff Jargon at [jargon@boulder.nist.gov](mailto:jargon@boulder.nist.gov).

## ANNUAL BUSINESS MEETING

The annual business meeting, consisting of the membership present, was called to order by President Chip Wilker.

An election was held for four members to serve on the Executive Committee (ExCom). As currently constituted, the ExCom is composed of twelve voting members each elected for a three year term. Eight candidates were introduced to the membership. Biographies of the candidates were distributed with the conference materials and each member was asked to review them. The ballots were passed out, a vote requested and the ballots were collected. The Past Presidents Committee proposed that the size of the ExCom be increased from the current twelve members to fifteen. After a spirited discussion, the membership approved the proposal. Chip Wilker, Dave Walker, Dominique Schreurs, Nick Ridler, Ron Ginley, John Cable and Uwe Arz were each elected.

Treasurer Ken Wong reported that the financial report of the organization is excellent and a balance sheet is available upon request. President Wilker adjourned the meeting.

## Executive Commitee MEETING

The ARFTG bylaws stipulate that the Executive Committee (ExCom) meet twice a year. The elected officers for the calendar years 2004 and 2005 are: President Brian Pugh, Vice President J. Gregory Burns, Secretary Nick Ridler and Treasurer Ken Wong. A complete list of the ARFTG Executive Committee members and assignments are enumerated on the ARFTG web site [www.arftg.org](http://www.arftg.org).

## FUTURE CONFERENCES

### 63<sup>rd</sup> ARFTG Conference



The 63<sup>rd</sup> ARFTG Conference will be held on Friday June 11 2004, in conjunction with the MTT International Microwave Symposium (IMS) at the Convention Center in Fort Worth, Texas. The main conference theme is “*On Wafer Characterization*”. For more information, please contact either the Conference Chairman, John W. Cable ([jcable@kcp.com](mailto:jcable@kcp.com) or 816.997.4361) or the Technical Program Chairman, Charles E. Gustof ([c-gustof@ratheon.com](mailto:c-gustof@ratheon.com) or 972.344.2715).

### 11<sup>th</sup> NIST/ARFTG Short Course

ARFTG in cooperation with NIST will offer its eleventh annual Microwave Measurements Short Course in conjunction with the Fall 2004 ARFTG Conference to be held in Orlando, Florida. This popular two-day course provides both grounding in the fundamentals as well as the latest in measurement techniques taught by the experts. Basic measurement techniques are covered on Day 1, including: microwave measurement overview, circuit theory, vector network analyzers, test fixtures, on-wafer measurements, power, and noise. Additional in-depth topics are covered on Day 2, including: phase noise, load-pull, digital modulation, and time domain techniques. Several tutorials specifically related to the conference theme are also covered on Day 2. For more information, please visit our web site, [www.arftg.org](http://www.arftg.org), or contact the short course director, Dave Walker, ([dwalker@boulder.nist.gov](mailto:dwalker@boulder.nist.gov) or (303)-497-5490).

### 64<sup>th</sup> ARFTG Conference

The 64<sup>th</sup> ARFTG Conference will be held in Orlando, Florida on December 3<sup>rd</sup> and 4<sup>th</sup> 2004. The main conference theme is as yet to be announced. For more information, please contact the Conference Chair, Joe Tauritz, ([j.l.tauritz@el.utwente.nl](mailto:j.l.tauritz@el.utwente.nl))

### 65<sup>th</sup> ARFTG Conference

The 65<sup>th</sup> ARFTG Conference will be held in conjunction with the MTT International Microwave Symposium (IMS). The ARFTG Conference will be

held on Friday June 10<sup>th</sup> 2005 in Long Beach, California.

### **Additions/Corrections**

Every effort has been made to publish correct information. Problems should be reported to the undersigned. Corrections will be made in the final copy of the Newsletters found in the Digest.

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