



AUTOMATIC RF TECHNIQUES GROUP

CONFERENCE NEWSLETTER

FALL 1998

NUMBER 20

The 52nd Conference Computer-Aided Design and Test for High Speed Electronics

OVERVIEW

Sonoma County provided a very enjoyable setting for the 52nd ARFTG conference which was held on December 3rd and 4th. This conference offered a two-day technical program and a tour of Hewlett Packard's Santa Rosa Facility. A complete listing of the papers presented is given on Pages 3 and 4 with complete copies of each presentation available in the conference digest. Additional conference information is available on our website at www.arftg.org.

Conference Chair Kevin Kerwin put forth considerable effort to ensure an outstanding conference. In addition to his duties as chair, he acted as host in completing arrangements with the conference hotel and acted as guide, providing many with information about the local sites including the many wineries.

SHORT COURSE

The 5th annual NIST/ARFTG Microwave Measurements Short Course titled "Computer-aided RF and Microwave Testing and Design" was given on December 1st and 2nd. This two-day course offers an excellent introduction for those new to the field or review for those who wish to expand their knowledge on a wide variety of microwave measurement topics. The course organizers and instructors put forth considerable effort in keeping the presentations up to date. The author benefited greatly when he took the course several years ago. Additional short course

information is available on our website at www.arftg.org or by contacting David Walker at dwalker@boulder.nist.gov.

TECHNICAL SESSIONS

At the Sonoma County Double Tree Hotel, technical sessions discussed the conference theme as well as a number of other diverse subjects of common interest. Technical Program Chair Brian Hughes brought together an interesting program consisting of 16 presented papers. Topics included: High Frequency Design Processes; Simulation; Active Device Measurement; Automated Component Measurement; Measurement Standards; and Characterization Techniques of Wireless Systems.

Selected by the attendees as the Best Technical Paper was "A Sub 1 Ω Load-Pull Quarter-Wave Pre-Matching Network Based on Two Tier TRL Calibration", presented by John Sevic.

AWARDS

The awards banquet was held at the California Welcome center and included an entertaining presentation on wine tasting and a wonderful selection from the local wineries to accompany dinner. For this conference, President Ken Wong gave Certificates of Appreciation to: Kevin Kerwin for having served as the conference chair; Brian Pugh for having served as the

technical program chair; Robert Judish, Larry Dunleavy and David Walker for having coordinated the NIST/ARFTG short course.

ARFTG also presented several special awards. The Automated Measurement Career Award was presented to Doug Rytting, considered by many to be the father of the modern network analyzer, for "a career of meritorious achievement and outstanding technical contribution in the field of Automated Microwave Measurements". The Automated Measurement Technology Award was given to Bruno Bianco, Mauro Parodi, Sandro Ridella and Branco Selvaggi for "The Original Development and Elegant Elucidation of the Thru-Reflect-Line (TRL) Calibration Method". An Honorary Membership was presented to John Barr for his many years of outstanding service to ARFTG.

For the 51st conference, the Best Technical Paper Award was given to Martin Schmatz for "Accuracy Improvements in Microwave Noise Parameter Determination". The Best Poster Paper Award was given to Randy Fenton for "Vector Corrected Power Sensor Calibration System". The Best Exhibitor was given to National Instruments.

EXHIBITS

The exhibits area at ARFTG Conferences provides attendees with the opportunity to view some newly developed products and to have in depth discussions with the suppliers about their test and measurement problems and needs. Attendees selected Maury Microwave as the Best Exhibitor. For additional information please contact Exhibits Chair Leonard Hayden at leonard@cmicro.com

DIGESTS

Digests for this and previous conferences are available from the Executive Secretary Henry Burger at h.burger@ieee.org or at (602)-839-6933.

MICROWAVE MEASUREMENT STUDENT FELLOWSHIP

ARFTG has announced a new Microwave Measurement Student Fellowship. 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 \$7500 awards may be granted each year, based on available funding and on the number and quality of applications received.

Applicants must have a bachelor's degree in engineering, physics or computer science and be enrolled as a full-time student in a graduate degree program 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.

For more information visit our website at www.arftg.org or contact Jeff Jargon at jargon@boulder.nist.gov.

ANNUAL BUSINESS MEETING

The annual business meeting, consisting of the membership present, was called to order by President Ken Wong. Pat Nolan presented for approval the minutes from the last business meeting held at the 50th conference in December, 1997 in Portland, OR. Gary Simpson presented for approval the Treasurer's Report showing the organization assets.

The Nominations Chair Charles Wilker conducted the election for the four open executive committee seats, each for a term of three years. Each candidate gave a brief presentation of their qualifications, followed by a vote by the membership. One current member of the executive committee, Gary Simpson, was reelected. Three new members were also elected: Dylan Williams of NIST, Leonard Harden of Cascade Microtech and Brian Pugh of Silicon Wave.

An amendment was proposed to modify the ARFTG constitution to remove the requirement that the semi-annual meetings be chaired by a member of the Executive Committee. A discussion both for and against was held, followed by a vote of the membership to allow the amendment.

EXECUTIVE COMMITTEE

The executive committee elected officers as stipulated in the organization's bylaws for the calendar year 1999: Ken Wong, President; Robert Judish, Vice President; Charles Wilker, Secretary; and Gary Simpson, Treasurer. For a complete list of the ARFTG Executive Committee members and assignments, please visit our website: www.arftg.org.

The executive committee authorized Ray Tucker to pursue the incorporation of ARFTG as a not-for-profit organization with tax-exempt status and also to pursue the determination of the organization's tax-exempt status with the Internal Revenue Service.

The executive committee also voted to include the ARFTG digest in IEEE MTT Bookbroker program. This should allow for more ready access for the very valuable information available in ARFTG digests to a much wider audience.

THANKS TO RETIRING EXECUTIVE COMMITTEE MEMBERS

This author wishes to note the completion at the end of the 52nd conference in 1998 of the terms of three executive committee members who have each made significant contributions to ARFTG.

Pat Nolan has been an important member of ARFTG for many years, the last several as Secretary. We will miss his tireless work, especially the high standards he set for this newsletter. We wish Pat well in his retirement from Lockheed Martin.

Kevin Kerwin has served the group as President and in many other capacities, including chair for the just completed 52nd conference. Kevin has accepted a new job assignment within Hewlett Packard and we wish him well.

Roger Marks has made many important contributions to ARFTG, including receiving the Automated Measurements Technology Award which he shared with Dylan Williams for their contributions to TRL. Roger will continue to serve ARFTG as our MTT-S liaison.

FUTURE CONFERENCES

53rd ARFTG Conference

The 53rd ARFTG Conference will be held on June 17-18, 1999, at the West Coast Anaheim Hotel, in Anaheim, California. The main conference theme is "Nonlinear Characterization". Please contact either the conference chair Gary Simpson of Maury Microwave (gsimpson@maurymw.com or (909)-987-4715 x225) or the technical program chair Don DeGroot of NIST (degroot@boulder.nist.gov or (303)-497-7212). This conference is held in conjunction with the 1999 IEEE MTT-S International Microwave Symposium.

6th NIST/ARFTG Short Course

The 6th annual NIST/ARFTG Microwave Measurements Short Course will be given on November 29th and 30th, 1999 in Atlanta, GA. Please contact David Walker of NIST at dwalker@boulder.nist.gov.

54th ARFTG Conference

The 54th ARFTG Conference will be held on December 1-2, 1999 in Atlanta, GA. The main conference theme is "Characterization of Broadband Access Technologies". Please contact the conference chair Larry Dunleavy of University of South Florida (dunleavy@eng.usf.edu or (813)-974-2574); or the technical program chair Joy Laskar of Georgia Institute of Technology (joy.laskar@ee.gatech.edu or (404)-894-5268).

ARFTG CONFERENCE AT DOUBLE TREE HOTEL SONOMA COUNTY

Presented Papers

Technical Session A: High Frequency Design Processes

How to Build a Learning Organization

Jim Fitzpatrick, Hewlett Packard, HP
EEsof Division

Increasing MMIC Design Capacity with Design Automation

Brian Hughes, Julio Perdomo, Hee-Soo
Lee, Hewlett Packard, HP EEsof
Division

Technical Session B: Simulation

Simulation of 915 MHz Receiver Using the HP Advanced Design System

E. Benabe, A. Kuppusamy, T. Weller, P. Flikkema, L. Dunleavy, Electrical Engineering Department, University of South Florida

Envelope Simulator Applications

Andy Howard, Hewlett Packard, HP EEsof Division

Diagnostics of High Speed Analog Circuits Using DC Conditions

Graciós Marín, Sarmiento Reyes, Instituto Nacional de Astrofísica

Technical Session C:**Active Device Measurement****A New Two Temperature Noise Model for FET Mixers Suitable for CAD**

F. Danneville, S. Fan, B. Tamen, G. Dambrine, A. Cappy, Hewlett Packard, HP EEsof Division

Noise Parameter Extraction of GaAs MESFETs and PHEMTs from Swept Noise Figure Measurements

Wayne Strubel, M/A COM

A Sub 1 Ω Load-Pull Quarter-Wave Pre-Matching Network Based on Two Tier TRL Calibration

John Sevic, Spectrian Corporation

Technical Session D:**Automated Component Measurement****Automated Wafer Analysis Using Wafer Map Auto-Correlation**

Geoffrey Hopcraft, Hewlett Packard

Automated Characterization of Ceramic Multi-Layer Capacitors

E. Benabe, K. Skowronski, T. Weller, H. Gordon, P. Warder, Electrical Engineering Department, University of South Florida

Technical Session E:**Measurement Standards****The National Wireless Electronic Systems Testbed and its Initial Development**

Roger Marks, National Institute of Standards and Technology

Design of Components for a 7-16 Precision Calibration Kit Using the High Frequency Structure Simulator

Bela Szendrenyi, Maury Microwave Corporation

Technical Session F:**Characterization Techniques for Wireless Systems****Measuring and Modeling Package Interconnects Using Vector Network Analyzers and Time Domain Transforms**

Joel Dunsmore, Hewlett Packard

NIST Passive Inter-Modulation Measurement Comparison for Wireless Base-Station Equipment

Jeffery Jargon, Donald DeGroot, Kristopher Reed, National Institute of Standards and Technology

Integrating System Level Design and Instrumentation for Communication Development

Frank Palmer, Hewlett Packard

Power Amplifier Simulations

Andy Howard, Hewlett Packard, HP EEsof Division

Tour of Hewlett Packard's Santa Rosa Facility**HP EEsof**

High-frequency CAD tools

Microwave Technology Center

GaAs fab and integrated circuits

Microwave Test Accessories

Standards lab

Santa Rosa Systems Division

RFIC, satellite, EMC, and aerospace and defense test systems

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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