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Technical Program Contents
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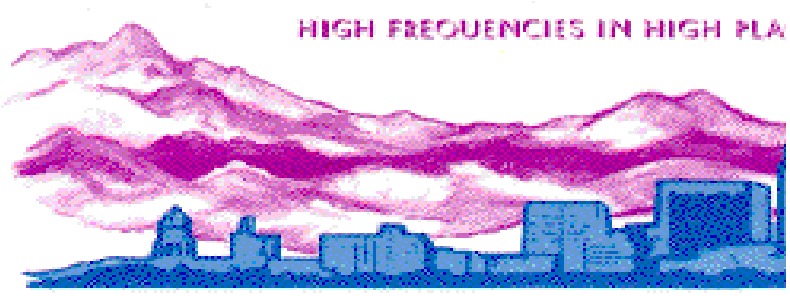

Session TU1A
(Joint RFIC and IMS Session)
Amplifier Technology

Chair

J. Schellenburg

Schellenburg Associates

Co-Chair

S. Weinreb

University of Massachusetts

This session consists of five MMIC amplifier papers covering a broad spectrum of applications ranging from wireless communications' applications at 900 MHz to CDMA and optoelectronic applications at frequencies up to Ka-band.

Session TU1B
(Focused Session)

Millimeter-Waves Over Fiber Systems

Chair

J.B. Horton

TRW

Co-Chair

A.J. Seeds

University College London

To meet the need for broadband communication systems, system designers have turned to millimeter-wave frequencies to solve bandwidth problems and to provide low cost, practical solutions for signal distribution in both wide area and local area networks. The increasing interest in using millimeter-wave signals for the final drop link in distribution networks together with the growing trend toward broadband mobile communication systems has led to interest in using optical fiber networks for distribution of millimeter-wave signals to base stations. Frequencies currently being considered for these networks range from 18 to 100 GHz.

Technically, this novel use of millimeter/fiber networks poses a new set of challenges that include basic circuits for millimeter wave modulation of light, combined millimeter-wave/optical receiver technology, and the propagation of millimeter wave modulated light in the presence of wavelength dispersion, polarization mode dispersion, and nonlinear effects found in the fiber medium.

The objective of this focused session is to provide an international survey that shows how these system and technology challenges are being overcome, and describes some of the work that is underway in Europe, Japan, and the United States. Planned millimeter-wave/over fiber system applications and future trends will also be discussed.

Session TU1C
(Focused Session)

Microwave Applications of Silicon Carbide

Chair

R. Kaul

U.S. Army Research Lab

Co-Chair

K.D. Breuer

AEL Industries

Silicon Carbide (SiC) has the potential for significant microwave system impact. SiC has the ability to operate at higher temperature and breakdown voltage than competing GaAs and Si technologies. These attributes provide higher intercept levels in mixers and allow higher baseplate temperatures for transmitters while maintaining high efficiency. Increased operating voltages increase power supply efficiency resulting in significant life-cycle cost saving. Improvements are still needed in material fabrication (crystal phase) and manufacturing procedures.

Session TU1D
Numerical Methods in Time Domain I

Chair

K. Naishadham

Wright State University

This session contains papers on the progress made in time domain methods in two areas: (a) enhancement of FDTD in interfacing with nonlinear circuit elements, and (b) novel source and discontinuity characterization methods in waveguide problems.

Session TU1E

Medical Applications and Biological Effects

Chair

M.A. Stuchly

University of Victoria, Canada

The main part of this session is devoted to modeling and analysis of electromagnetic interaction with living tissue, and possible interference with medical devices such as hearing aids. Other papers deal with measurement of the complex permittivity of biological and organic liquids at millimeter-waves, and microwave tomography.

Session TU3A
(Joint RFIC and IMS Session)

Monolithic Wireless Technology

Chair

N. Camilleri

Advanced Micro Devices

Co-Chair

Z. Bardai

Hughes Aircraft

This session focuses on advanced monolithic technologies being developed for the wireless industry. The session's six papers will discuss the advances in competing Silicon and GaAs technologies for cellular and PCS applications. Topics will include active and passive device technologies and component reliability.

Session TU3B
(Focused Session)

Electromagnetic Wave Interactions with Electron Devices and Circuits

Chair

J. Harvey

U.S. Army Research Office

Selected papers on the electromagnetic wave interactions with electron devices and circuits will be presented. Accurate approaches that combine DC fields and RF waves and simultaneously applying them to semiconductor devices are presented. Traveling waves on modern transistors and active transmission lines are analyzed. Large signal and thermal effects are also included.

Session TU3C
(Focused Session)

Acoustic Wave Devices for Portable Telecommunication

Chair

R. Weigel

University of Linz, Austria

This is a focused session devoted to state-of-the-art acoustic devices intended for ultracompact telecommunications. Acoustic devices such as surface wave acoustic (SAW) filters enable low cost, and high performance in these applications.

Session TU3D

Numerical Methods in Frequency Domain I

Chair

N. Alexopoulos

Universiy of Cailfornia-Irvine

This sesssion reports new frequency domain approaches to the analysis of photonic crystals and various waveguide structures.

Session TU3E

Analog Fiberoptic Link Technology

Chair

D. Jager

Duisburg University, Germany

Co-Chair

C. Gee

Ortel Corp.

State-of-the-art fiberoptic technology for generating and distribting analog signals from RF to millimeter-waves will be presented. Applications include wireless mobile communications and other broadband communication systems.

Session TU4A
(Joint RFIC and IMS Session)

Millimeter-Wave Monolithic Circuits

Chair

H.A. Hung

TRW

Co-Chair

S.S. Bharj

Princeton Microwave Technology

This session focuses on high power added efficiency HBT and HEMT MMIC amplifiers and chip sets. Papers are presented on 77 GHz T/R modules for automotive applications, voltage controlled oscillators and V-Band MMICs.

Session TU4B

Passive Components I

Chair

W.-C. Tang

Com Dev

As one can see in this session, much progress has been made in the broadbanding and miniaturizing of various passive devices and components. With the current demand for L-band PCS systems and Ka-band multi media activities, the trend toward wide-band devices with smaller size is expected to continue into the distant future.

Session TU4C

Superconductive Technology

Chair

W.G. Lyons

MIT Lincoln Laboratory

A variety of practical applications for superconductive technology are presented. This session highlights both sophisticated superconductivity microwave subassemblies as well as novel applications of the microwave properties of superconductors. Improvements in components demonstrate the continued progress of this technology toward enabling system applications.

Session TU4D

Numerical Methods in Time Domain II

Chair

P. Russer

University of Technology-Munich, Germany

In this session progress in error reduction and improvement of absorbing boundaries in time domain modeling of microwave structures will be reported. Critical issues such as optimal space and time discretization and stability of algorithms will be addressed.

Session TU4E

Microwave Photonic Systems and Components

Chair

A. Gopinath

University of Minnesota

Co-Chair

A. Paolella

Lockheed-Martin

This session covers advances in components for microwave photonic systems. A wide-band receiver used in a time-steered phased array, a self-oscillating mixer for Ka-band phased-array satellites, a very high speed surface emitting laser, heterojunction bipolar transistor optoelectric mixers, and analog integrated receivers will be discussed.

Session TU2A
(Plenary Session)

New Microwave Telecommunications Infrastructures

Speakers

Shant S. Hovnanian, CellularVision, USA
Robert C. Dixon, Omnipoint Corp.

The IMS Plenary Session, spotlighting two telecommunications infrastructures bound to revolutionize the microwave/RF industry, features two Keynote Speakers: Mr. Shant S. Hovnanian, CEO and cofounder of CellularVision USA, and Mr. Robert C. Dixon, Chief Scientist of Omnipoint Corp.

llularVision operates a local multipoint distribution system (LMDS), a 28 GHz multi-channel broadband w reless cellular television service, in New York City. CellularVision pioneered LMDS, which many expect to b come a primary means of high-speed data, voice, and video into and out of the home. Mr. Hovnanian, who h lds a B.S. in Economics from the University of Pennsylvania, will address the opportunities of this industry, p rticularly as it evolves into two-way, digital network.11

nipoint Corp., of Colorado Springs, Colorado, also has a New York connection. It is currently building an i novative spread spectrum PCS system in that city as part of its plan to offer wireless communications services t a number of major U.S. cities. In addition, the company develops equipment for PCS and wireless local l op. Mr. Dixon is an originator of spread spectrum technology and is the author and editor of the first two b oks ever published on the topic; his book Spread Spectrum Technology is in its third edition. A well-known l cturer, Mr. Dixon will pose the question, “Will the Real PCS Please Stand Up?” and discuss whether PCS is a opportunity for real technological innovation or will end up as just up-banded cellular telephony. 1 1