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Topic: Microwave and Millimeter-wave devices: what choices will RF engineers have in the next 5 and 10 years?

IEEE Dallas Section Senior member Upgrade and Officers training
 Saturday, June 7th, 2008
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IEEE Direction Dallas Section

June 2008

Volume 51, Number 10

From the Chair

By *Robert Shapiro*

Hello Colleagues,

Well, June is here and we are near the midpoint of this year and as my term as your Chair of the IEEE Dallas Section.

Here are some retrospective notes to date:

1. The IEEE Dallas Section remains one of the largest in IEEE with well over 5200 members
2. Our membership growth in 2008 is up slightly but short of our goal of 5%. This is a trend within all of IEEE
3. The Section has combined the meetings with the Consultants Network and the attendance has gone from 20 at each meeting to about 75 per combined meeting consistently every month
4. Members of the Section ExCom have attended meetings in KC at the yearly Region 5 event and in Indianapolis for the IEEE USA meeting
5. We held a well attended Awards banquet in early May

Moving forward:

1. Each month in the Chair's note I would like to focus on an area of IEEE membership value and development such

as senior level upgrade events, society technical meetings, officer and leadership training, etc.

2. On that same note, we are having a senior network event this Saturday at SMU along with officer training - Please look for details in your emails.
3. In September some of the ExCom will be going to IEEE Sections Congress in Quebec City, Quebec, Canada, to represent Dallas and help determine the direction of IEEE over the next 3 years.
4. We will have another senior upgrade event in the fall, along with officer training, and budget planning.

Please let me know if you have any questions or if I may be of service.

Sincerely,
Bob Shapiro
 IEEE Dallas Section
 2008 General Chair



Joint meeting between IEEE Dallas Section and IEEE Consultants network

Topic: Resumes That Get Results

Date: Monday, June 9, 2008

Time: Social/Networking/Dinner 6:15 pm Program 6:45 pm.

Location: Holiday Inn Select, 1655 North Central Expressway, Richardson, TX (south of Campbell Road, west side of Central)

Speaker: Sonia Lowery, Senior Consultant, DBM

Cover: \$5 for IEEE Members, \$15 for non-IEEE Members/Guests (includes light supper buffet) IEEE members who RSVP may bring a guest at no additional charge if they RSVP by June 6.



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Dallas Section

Chapter Meetings/Events

Consultants Network (CN)

Topic: Resumes That Get Results

Date: Monday, June 9, 2008

Time: Social/Networking/Dinner 6:15 pm Program 6:45 pm.

Location: Holiday Inn Select, 1655 North Central Expressway, Richardson, TX
(South of Campbell Road, west side of Central)

Speaker: Sonia Lowery, Senior Consultant, DBM

Cover: \$5 for IEEE Members, \$15 for non-IEEE Members/Guests (includes light supper buffet) IEEE members who RSVP may bring a guest at no additional charge if they RSVP by June 6.

RSVP: Send an email to Maura@Bestatselling.com with the number of guests and names of people in the email

Description: This program will be a guide for you to build a resume which is your unique marketing brochure. It will create interest and set you apart from the competition. You will learn:

- How long does it take to review your resume?
- What do recruiters look for?
- What attracts attention and will get your foot in the door?

Speaker Bio: Sonia Lowery has over twenty years experience in the Human Resource and Career Development and Management arena. Her career began at Richland College as a Career Planning and Placement Specialist and for almost ten years she assisted students with career development and job search. She also worked with area companies in their college recruiting efforts.

Sonia decided to begin a new career in sales and marketing and worked as a Regional Manager for a California-based recruitment publications company. For ten years she developed business with large corporations in the Southwest region and sold various types of recruitment advertising.

In 2000 she was recruited by DBM to work as a Career Transition Consultant where she currently assists clients at all levels through the job search process. She has extensive experience working with professionals who are trying to make decisions about the direction of their careers – whether that be leaving an organization or actually changing career paths. She also facilitates Workshops and mini-seminars on various aspects of career transition.

DBM (www.dbm.com) is a leading global outplacement, coaching, and career management firm providing services to private and public companies, not-for-profits and governments. When companies make decisions that impact careers, DBM provides services to support the organization, the employees who stay and the employees who need to leave. DBM also helps organizations and leaders improve their performance through coaching. DBM has a 40-year legacy of creating innovative best practice solutions, most of which have become industry standards. DBM has 200 locations around the globe serving 85 countries and has partnered with 70 percent of the Fortune 500 and 80 percent of the Global 500 companies.

Consumer Electronics (CE)

Topic: MEMS in Consumer Electronics

Date: Tuesday, June 10th, 2008

Time: Lunch/Chapter business: 11:15 AM - 11:45 P.M.

Program: 11:45 - 12:45 P.M.

Location: Holiday Inn Select, Richardson
1655 N. Central Expressway (US 75),
(Southbound frontage road, south of Campbell)
Richardson, TX 75080

Speaker: Arun Gupta, Texas Instruments Inc.

Cost: Buffet lunch: \$5.00 for IEEE members and \$10.00 for non-members

DOOR PRIZES

Abstract: Over the past decade, there has been much hype, disillusionment, and wonder regarding MEMS technology. Short for Micro Electro Mechanical Systems, MEMS is a broad category of miniature devices that are manufactured using micromachining processes derived from traditional semiconductor processing technology. These devices hold much promise for the future of consumer electronics, potentially enabling such applications as lab-on-a-chip for home-based health care and radio-on-a-chip for fingernail-sized cellular phones. However, MEMS chips have already been a commercial success in several consumer electronics applications today, including Texas Instruments DLP® Display Technology as well as micro accelerometers in automotive air-bag deployment and more recently in Nintendo Wii® remote controls. This talk will explain the basics behind MEMS technology as well as its present and future applications in consumer electronics.

Biography: Arun Gupta received B.S.E. and M.S.E. degrees from the University of Michigan in the fields of MEMS, circuits, and microsystems. There he gained experience with a variety of biomedical sensors, including implantable blood glucose monitors. In June of 2007 Arun joined TI as a member of the DMD design team in DLP® products.

For additional information, please contact
Sue Hui at (214)567-5017, shui@ti.com
or visit our website: <http://www.DallasCES.org>

Technology Management Council (TMC): & Life Member Group (LMG):

Topic: Cancer Prevention and Screening

Date: Rescheduled to Friday, June 13, 2008

Time: Lunch at 11:30 AM

Location: Holiday Inn, Richardson, TX
Phone: (972) 238-1900

Speaker: Dr. Virginia Kinsella

Cover: TMC Members: We are asking for \$5 donations to help keep us on budget.
Life Members and Students: no charge.

RSVP: Please RSVP to Bob Bishop <r.bishop@ieee.org>.

TMC members, Life Members and Spouses are invited for lunch.

Speaker Bio: Dr Kinsella is a Board Certified Medical Oncologist who was born and raised in Porto Alegre, Brazil. She earned her medical degree from Pontifical Catholic University School of Medicine. Dr. Kinsella completed her residency in internal medicine at Texas Tech University Health Science Center in Lubbock, TX and her fellowship in Hematology/Oncology at George Washington University in Washington, DC. Dr. Kinsella has been in private practice in Plano, TX since 2004. Her email is CancerHelp.Kinsella@gmail.com

Next meeting: Friday, September 12, 2008 with UTD School of Management

Dallas Section

Chapter Meetings/Events

Circuits and Systems (CAS)

- Topic:** Two Zero and Two Pole Active Compensation Replaces a Charge Pump in PLLs
- Date:** Wednesday, June 25, 2008
- Time:** 6:30pm, Refreshments - Pizza & Drinks;
7:00pm, Program
- Location:** Dallas Texans Activities Center, Conf Room 1
(North end of Texas Instruments expressway site,
13900 N Central Expw.; site entrance on north-bound
access road, between Midpark Rd. & Spring Valley Rd.)
- Speaker:** STANLEY JAY GOLDMAN, DMTS,
Texas Instruments Inc, Dallas, TX

Abstract: As the sizes of transistors are reduced, the power supply voltage level has been reduced from 3.3V to 1.2V. This level change has reduced charge pump linear operating ranges to approximately 200mV, while Operational Amplifiers can be designed to have almost rail to rail operating ranges from 0.1 to 1.15V range. Furthermore, some types of VCOs draw a significant amount of current (>100µa) from the tune line. A charge pump configuration has high output impedance and the loop becomes unstable when voltage is drawn off the integrating capacitor. For this application an operational amplifier provides a low impedance drive to the tune line, which prevents any voltage reduction off the integrating capacitor, and provides regulation of the power supply. Finally, the 2 zero 2pole compensation shows that active filter compensation provides much more circuit flexibility in achieving loop compensation.

Therefore, a 2 zero and 2 pole compensation circuit with an operational amplifier replacing a charge pump in a PLL has been fabricated in a 0.065µm gate length CMOS technology. It achieves state of art performance with 1mW low power dissipation at 240MHz output frequency and a small 0.06mm² area. The circuit has a wide output frequency range of 12-600MHz with a low jitter measurement of 80ps peak to peak.

Speaker's Bio: Mr. Goldman received his B.S. degree in Electrical Engineering from Carnegie-Mellon University in 1975. He has had a long career designing and developing distinctive Phase Lock Loops for over 25 years at Scientific Communications, E-Systems, Rockwell International, Reliance Electric, and at Texas Instruments Inc. in the Wireless Terminal Business Unit. For over 20 years at Texas Instruments Inc., he has been applying Phase Lock Loop solutions to computer timing, radar transmission and reception, automotive electronic control, and communication systems. His most recent work has been designing low power, small area, and low noise Phase Lock Loops as a Distinguished Member of the Technical Staff for the Wireless Analog Technology Center at TI.

He has been a Senior Member of the IEEE and a registered Professional Engineer for over 20 years. Mr. Goldman has published and presented over 24 papers and has 8 US patents on the subjects of frequency synthesizers, oscillators, multipliers, phase noise, Phase Lock Loops, receivers, and signal processing. And finally, he is the author of the Artech House Best Selling book, **Phase-Locked Loop Engineering Handbook (2007) and Phase Noise Analysis in Radar Systems, (Wiley 1986).**

Microwave Theory and Techniques (MTT)

- Topic:** Microwave- and Millimeter-wave devices: what choices will RF engineers have in the next 5 and 10 years?
- Date:** Monday, June 30, 2008
- Time:** Lunch 11:30 AM / Program 12:00 noon
- Location:** Pasand-Indian Cuisine
1377 W Campbell Rd, Richardson, TX
Phone: (972) 644-4447
- Directions:** <http://maps.google.com/maps?f=q&hl=en&geocode=&q=Pasand+Richardson,+TX+75080&ie=UTF8&ll=32.987356,-96.761913&spn=0.079913,0.125656&z=13&iwloc=A>
- Speaker:** Dr. Paul Saunier, TriQuint Semiconductor
- Cover:** Mandatory \$5 (\$10 for non-IEEE members) includes admission and buffet. No charge for Student and Life Members.
- RSVP:** Please RSVP to csanabria@tqs.com by noon, June 27th, for restaurant headcount.

Abstract: Predicting the future is always a risky business full of surprises! For lower frequencies (up to S- to C-band) High Voltage GaAs will show all its advantages in performance, reliability and cost. We will report our major accomplishments in this field. For sure, GaN-on-SiC is now the "new favorite device" and it is well justified! Demonstrated great power density (~ 5 to 10W/mm) at high voltage bias (40V and above) with excellent efficiency and gain up to Ku-band insure a nice future now that its reliability has greatly improved to usable levels. But GaN-on-SiC has an even greater future for millimeter-wave applications! Indeed it allows very small MMICs from Ka-band to W-band with multi-watt power level. However the cost of its substrate (SiC) is still a hurdle to wide spread use. If GaN-on-Silicon has also demonstrated very good performances (results will be reported) and offers truly low cost, perhaps the future of Wide Bandgap technology will rely on "alternate substrates" where the GaN epitaxial heterostructure (initially grown on large diameter Silicon wafers) is wafer bonded to a low-cost CVD Diamond (yes, low-cost...) or PolySiC substrates. Let's not forget that Silicon CMOS technology is also constantly making amazing progress! New Si CMOS GSM PA's (with all the controlling circuits) are now capable of 3.5W with ~ 50% PAE at a fraction of the cost of GaAs PA's. For the undeterred researchers Diamond (the crystal type) promises the next revolution! Even higher breakdown field than GaN, very high electron saturated velocity, at least four times better thermal conductivity. A device engineer's dream except for the availability of a dopant and this pesky cost issue...

Speaker Bio: Paul Saunier is a Senior Fellow at TriQuint Semiconductor. He holds a MS and PhD from Carnegie Mellon University (1979). He has been with TriQuint for the past 10 years developing High Voltage GaAs devices and more recently GaN HEMT's. Prior to joining TriQuint he had been with Texas Instrument's Central Research Laboratories since 1979 where he pioneered the use of HEMT, pHEMTs and other heterostructures for RF power (and low-noise) applications. He is an IEEE Senior Member and has over 100 publications.

Sponsorship: This announcement is brought to you by Groover & Associates patent attorneys. "Respect for Technology. Respect for Technologists"
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More information at the MTT website:
<http://ewh.ieee.org/r5/dallas/mtt/>

Dallas Section Chapter Meetings/Events

IEEE Dallas Section Senior member Upgrade and Officers training

Date: Saturday, June 7TH, 2008
Time: 11:00 am - 12:00 noon (officer training)
12:00 noon - 1:30pm (senior member upgrade)
Pizzas and drinks will be provided
Location: Southern Methodist University
Dallas, Texas 75205
Venue: Huitt Zollars Pavillion in Embrey Engineering
building
Parking: <http://www.smu.edu/maps/>

Existing IEEE Senior and Fellow members will be at the meeting to help with the application. They will also serve as references after reviewing the resumes and talking to the interested candidates. It is important for interested candidates to provide an updated resume and other relevant documents for the nominees to complete the nomination process online.

Event details: If you meet the two criteria below, then you are eligible to apply for upgrade to Senior Member Grade.

1. Ten years of professional experience
 - Your educational experience is credited toward that time as follows:
 - 3 years for a baccalaureate degree in an IEEE-designated field
 - 4 years if you hold a baccalaureate and masters degree
 - 5 years if you hold a doctorate
2. Five years of significant performance such as:
 - Substantial engineering, responsibility or achievement
 - Publication of engineering or scientific papers, books or inventions
 - Technical direction or management of important scientific or engineering work with evidence of accomplishment
 - Recognized contributions to the welfare of the scientific or engineering profession
 - Development or furtherance of important scientific or engineering courses that fall within the IEEE designated fields of interest
 - Contributions equivalent to those of (a) to (e) above in areas

such as technical editing, patent prosecution or patent law, provided these contributions serve to substantially advance progress in IEEE designated fields.

Complete upgrade information, including requirements can be found at: <http://www.ieee.org/organizations/rab/md/smprogram.html>

If you meet these requirements but never seem to have the time to complete an application, we invite you to come to the IEEE Senior Member Upgrade Event organized by the IEEE Dallas Section.

SM Applicant Information: IEEE Dallas section members interested in upgrading their membership are asked to bring the following documents for completing the SM application process:

1. Electronic copy of your resume
2. Degree certificates for verification of degree.
3. Brief Biography of the candidate detailing significant achievement over the last five years in the industry.

IEEE SM forms and related information are available for reference at: <http://www.ieee.org/organizations/rab/md/smforms.htm>

Please familiarize yourself with the requirements and bring the necessary documents to avoid any potential issues during the event.

Existing IEEE Senior Members and IEEE Fellows:

The IEEE Dallas Section is also requesting the support of existing IEEE Senior Members and IEEE Fellows to attend this event and serve as references. If you are a Senior Member or IEEE Fellow who is part of the Dallas Section and would like to help out with this event, please RSVP to:

Dinesh Rajan [rajand@enr.smu.edu] or
Larry Zhang l-zhang1@ti.com

Dallas Section

Chapter Information

Aerospace and Electronic Systems (AES)

Website: <http://ewh.ieee.org/r5/dallas/aes/index.html>

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Tim_D_Reichard@raytheon.com

Program Chair: Jared Ellington (214) 654-5660

Secretary / Treasurer: Mark Gober (972) 205-4752
Mark_D_Gober@raytheon.com

Antennas and Propagation (AP)

Website: <http://www.ieeedallas-aps.org/>

Chair: Mr Narindra Nath Lakhanpal (972) 387-9243
narindra_lakhanpal@hotmail.com

Circuits and Systems (CAS)

Website: <http://ewh.ieee.org/soc/cas/dallas/>

General chair: Sudhind Dhamankar
sudhind@ti.com

Vice chair: Luke Wu

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Communications & Technology (CVT)

Website: <http://www.cvt-dallas.org/>

Chair: Steve Maxwell (972) 250-1289
smaxwell@wt.net

Computational Intelligence (CI)

Chair: Dingding Chen (972) 418-3472
Dingding.Chen@Halliburton.com

Administrative Chair: William A. Dembski (817) 923-1921 x4435
wdembski@designinference.com

Organization Chair: Orlando De Jesús (972) 418-3078
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Computer (C)

Website: <http://chapters.computer.org/dallas/>

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j.bondi@ieee.org

Vice Chair: Don Shaver
shaver@ieee.org

Treasurer: Steve Chenoweth
schenoweth@ieee.org

Secretary: Bill Pervin
Pervin@utdallas.edu

Program Chair: Jim Bondi

Web Chair: Jim Bondi

Consultants Network (CN)

Website: <http://www.ieeedallascn.org/>

Chair: Neil Kaden
kaden@circleNK.com

Consumer Electronics Society (CES)

Website: <http://www.dallasces.org/>

Chair: Sue Hui (214) 567-5017
suehui2000@yahoo.com

Vice Chair: Mike Hannah (214) 480-1087
m-hannah@ti.com

Treasurer: Anuradha Sundararajan (214) 293 2537
sanuradha@ti.com

Secretary: Adolfo Echeverria (972) 742-7579
adolfo@ti.com

Education (E)

Past Chair: William M. Riley (214) 478-4065
bill@billrileys.com

If you are interested in volunteering/becoming an officer for this society, please contact the past chair, William Riley.

Electromagnetic Compatibility (EMC)

Website: <http://www.dallasemc.org/>

Chair: Carl Irby (817) 777-9161
carl.a.irby@lmco.com stanfield_joe@yahoo.com

Electron Devices (ED)

Chair: Zeynep Celik-Butler (817) 272-1309
zbutler@uta.edu

Engineering in Medicine and Biology (EMBS)

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Engineering Management (EM)

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Laser & Electro-Optics (LEO)

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Chair: Martin Achtenhagen (972)235-7584 x2227
machtenhagen@photodigm.com

Microwave Theory and Techniques (MTT)

Website: <http://ewh.ieee.org/r5/dallas/mtt/>

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claudio@ti.com

Treasurer: Weimin Peng

Secretary: Chris Sanabria
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Program Chair: Jim Carrol
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Program Chair: Hank Largey
largey@ti.com

Power Engineering (PE)

Website: <http://ewh.ieee.org/soc/pes/dallas/>

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Power Electronics (PELS)

Website: <http://www.Dallaspels.org>

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Treasurer: Zao Yang

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Dallas Section Chapter Information

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Meeting Chair: Huawin Jin
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Vice Chair: Mr Paul Lakhanpal
narindra_lakhanpal@hotmail.com

Secretary/Treasureer: Mr Mohit S. Malhan (214) 356-5714
mohit.05@gmail.com

Life Member Group Officers:

Chair: Mr Narindra Nath Lakhanpal (972) 387-9243
narindra_lakhanpal@hotmail.com

Vice Chair: Mr. Robert B. Bishop (903) 815-8788
r.bishop@ieee.org

Tease Your Brain!!!

There are two lengths of rope. Each one can burn in exactly one hour. They are not necessarily of the same length or width as each other. They also are not of uniform width (may be wider in middle than the end), thus burning half of the rope is not necessarily 1/2 hour. By burning the ropes, how do you measure exactly 45 minutes of time?

Answer bottom of page.



The Dallas Section of the Institute of Electrical and Electronic Engineers (IEEE) for the benefit of its members publishes *Direction* monthly from September through May. Articles, special announcements and information for publication should be submitted to Dinesh Rajan (rajand@enr.smu.edu) The deadline for submission of materials is no later than the 20th of the month prior to the month of publication.

Advertising: *Direction* is distributed to approximately 7,200 members in the Greater Dallas area.

Invoicing and/or contractual agreements for advertising are administered by Dinesh Rajan, Administrative Chairman and Mark Swenholt, Treasurer, IEEE Dallas Section. All ad insertions must be cleared through the executive board before publication. Advertising rates are as follows:

Per Insertion

Full Page \$800.00 **Quarter Page** \$200.00

Half Page \$400.00 **Bus. Card** \$120.00

Mind Tease Solution:

If you light both ends of one rope, it will burn in exactly a 1/2 hour. Thus, burn one rope from both ends and the other rope from only one end. Once the one rope (which is burning from both ends) finally burns out (and you know a 1/2 hour has elapsed), you know that the other rope (which is burning from only one end) has exactly 1/2 hour left to burn. Since you only want 45 minutes, light the second end of the rope. This remaining piece will burn in 15 minutes. Thus, totaling 45 minutes.

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