IEEE NEWS FOR MARCH 2013

Jacob Z. Schanker, P.E., Newsletter Chair
The Rochester Section web site is at: http://rochester.ieee.org/

Rochester Section Meeting – Tuesday, March 5, 2013 at 12 Noon

The next Rochester Section business meeting is on Tuesday, March 5, 2013 at 12:00pm, at the **Hibachi Sushi Buffet Restaurant** in South Town Plaza on Jefferson Road (Route 252) just west of West Henrietta Rd. (Route 15). This is a trial of a new venue for these meetings. If it goes well we will be moving there for future section Excom meetings.

Any IEEE member is invited. Lunch is only $3 for IEEE members. No reservation or RSVP is needed, just show up.

IEEE Geoscience & Remote Sensing Society Chapter in March

The GRSS chapter would like to announce its new leadership structure for 2013:

Chair: Dr. Tony Vodacek (RIT)
Vice-chair: Dr. Emmett Ientilucci (RIT)
Secretary: Dr. John Kerekes (RIT)

Congratulations to the new leadership team and best wishes for a productive 2013!

GRSS Meetings in March: (all meetings take place at Carlson Auditorium, Carlson Building (76), RIT Campus, 54 Lomb Memorial Drive, Rochester, NY)

Date: Wednesday, March 6, 2013
Time: 4-5pm
Talk: Recent developments in photogrammetric orientation of close-range image networks and high-resolution satellite imagery
Speaker: Dr. Clive S. Fraser; Program Science Director, CRC for Spatial Information; Professorial Fellow, Dept. of Infrastructure Engineering; University of Melbourne, Australia

Date: Wednesday, March 13, 2013
Time: 4-5pm
Talk: Hyperspectral Target Detection Enhancement through Radiometric Signature Modeling
Speaker: Dr. Michael T. Eismann; Senior Scientist; Electro-Optical and Infrared Sensors; Sensors Directorate; Air Force Research Laboratory (AFRL)

Date: Wednesday, March 27, 2013
Time: 4-5pm
Title: Using Airborne and Space Lasers to Measure Forests
Speaker: Dr. Ross Nelson, NASA-Goddard Space Flight Center

Abstract: Airborne lasers can be used to create maps of forest height, volume, biomass, and carbon across 100's of square kilometers. However, due to expense of the data collects, larger areas, e.g., states, provinces, continents, require that airborne and space lidar be employed as sampling tools to estimate forest biomass and carbon across large, remote areas where the acquisition of ground-based measurements might be difficult, expensive, or dangerous. This presentation will explore how these data are collected, processed, and integrated with ground measurements to assess forest resources worldwide.

Biography: Ross is from the Hydrospheric and Biospheric Sciences Branch, NASA-Goddard Space Flight Center, Greenbelt Maryland, USA. He received his education in:

- BS Forest Management, University of Maine, Orono, 1974
- MS Forestry/Remote Sensing, Purdue University, 1978
- PhD Forest Biometry, Virginia Tech, 1994

His research interests focus on the use of airborne and space lasers for large-area forest inventory and monitoring.

Join us at the IEEE Table at the RES Annual Gala April 20

The Rochester Section traditionally has one or two tables (of ten or twelve) at the annual RES Gala, which this year will be on Saturday, April 20, 2013. This where the entire Rochester engineering community comes to have fun and celebrate. The IEEE awards two scholarships at the gala and the winners will likely be sitting with us at our tables.

IEEE members are invited to the Rochester Engineering Society 111th Annual Gala at the Riverside Convention Center on April 20. You may bring a guest; the cost for IEEE members or their guest is $40 per person.
Reception starts at 5:15, with entertainment, dinner and program from 6:15 to 9:15pm. Further details are in this issue and on the RES web site, www.roceng.org.

To make a reservation, call Harold Paschal at 585-385-5898 or cell 585-643-9266, or call Bill Fowlkes at 585-588-9424 or cell 585-298-7820. Payment must be received by April 2nd. Make checks out to *IEEE Rochester Section*. Checks may be brought to the March or April Rochester Section Meetings or mailed to: Harold Paschal, 276 Dale Road, Rochester, NY 14625

Logarithms

Recently, I subbed for a colleague and lectured his class on logarithms and decibel notation. It struck me that except for its use in calculating decibels (deciBels), logarithms are out of sight and out of mind for most engineers these days. Yes, they do also appear in scaling of the axes of plots of various kinds, especially frequency response, but otherwise they are in the shadows. It wasn't always that way. Before the advent of the pocket scientific calculator, logs were an essential tool for all engineers and technical people. Not only did we carry around tables of logarithms - usually in the back of a handbook like the ITT Reference Data for Engineers or The New Departure Handbook for mechanical types - but logs were front and center on our log-log duplex decitrig slide rules. In some ways logarithms are like cursive writing, thought by some to be irrelevant in today's computer age. Well checks are still with us, and legal documents too. How do these get signed if you don't know how to write?

If you are younger than a geezer, you may wonder what the logs were for. The answer is that they were an easy way to multiply and divide to within acceptable engineering accuracy and to not have to resort to tedious and error-prone multiplication and long division. In high school (Brooklyn Tech) we were required to memorize the logarithms (mantissas) of the digits 1 to 10 to four decimal places. That knowledge has been useful in many ways over the years. I will mentally calculate decibels in front of a class while they race to do the same on their TI graphing calculators, and always beat them.

Only lately I've realized that you actually only need to remember three logs, those for 2, 3 and 7. All the rest can be calculated from those by addition or subtraction. This assumes you also know that log(1)=0 and log(10)=1. We can do this by relying on the basic relationships for logarithms, the ones that give them so much power. These are: log (ab) = log a + log b, log (a/b) = log a – log b, and log (a^b) = b·log (a). Using these we get log (4) = log 2 +log 2 or 2 log (2). Log (8) = 3 log (2). Log (5) = log (10) – log (2) and so on.

Nowadays, logs are with us in all the fields that rely on decibel notation to indicate ratios or levels of voltage or power relative to some reference level. And logs are not just base 10, but also natural logarithms which are base e. And from natural logarithms (the **ln** button on your calculator) comes the Neper, used in transmission line work. But that's a story for another time.