



February 2013 Newsletter

Joint Section Chapter – Boston - New Hampshire - Providence

December 2012 – February 2013

<http://www.ieee.org/bostonrel>

Greetings,

We had a great year in 2012. Eight technical presentations were held last year on topics including lasers, software, conformal electronics, and counterfeit parts. Our speakers, including scientists, engineers and a CEO came from around the Boston area and were from various types of organizations. We had speakers from a one-person consulting company, a start-up, and MIT Lincoln Laboratory.

I had the honor of representing our local chapter in June 2012 at a conference in Denver, Colorado of the IEEE Reliability Chapter Chairs from around the world, including Taiwan, Dallas, Chicago, Denver, and several other places. I accepted our award for being the third best IEEE Reliability Chapter in the world in 2011.

We had a record turnout of voters for the Advisory Committee positions, and I'm pleased to begin my first year as a re-elected Chair of the Reliability Chapter. We have a great team supporting our activities. Please join us with as much or as little time as you like, helping us with our activities. There are many jobs, big and small, that await your contributions.

Looking forward to a successful 2013, I anticipate interesting presentations from scientists and engineers on diverse topics from the fields of physics, electronics, and biology, all related to reliability of hardware, software, or processes.

I hope to see you at our next meeting,

Dr. Dan Weidman
2013 Chair

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December 12, 2012 “ESD Damage – A Surprisingly Dominant Quality and Reliability Failure Mechanism”, Ted Dangelmayer. Co-sponsored by the Northeast Chapter of the ESD (Electrostatic Discharge) Association, at MIT Lincoln Laboratory, Lexington, MA.

Awards & Recognitions

January, 2013 “2013 AdCom Officer Election Results”
IEEE Boston Reliability Chapter Officers for 2013

Upcoming Events

February 13th, 2013 “Photonic Magnetometry Measurement at a (Short) Distance”, Chris Sataline, MIT Lincoln Laboratory, held at MIT LL, Lexington, MA.

March 20th, 2013 “Electrical Overstress (EOS), the sources and solutions”, Terry Welsher, Senior Vice President of Danglemyer Associates. Co-sponsored by the Northeast Chapter of the ESD (Electrostatic Discharge) Association, at MIT Lincoln Laboratory, Lexington, MA.

April 10th, 2013 “Biological Systems – How Reliably Can They Be Engineered?”, Dr. Peter Carr, MIT Lincoln Laboratory.

Recent Activities

December 12, 2012

“ESD Damage – A Surprisingly Dominant Quality and Reliability Failure Mechanism” by Ted Dangelmayer

The December presentation was given by Ted Dangelmayer, a leading expert in ESD (Electrostatic Discharge) and the effects on electronics. Under Ted’s leadership, Lucent Technologies in North Andover, Massachusetts, was the first site in the USA to become ANSI/ESD S20.20 certified. Ted now runs an ESD consulting company with several consultants and has written a book. His presentation on 12/12/12 to the IEEE Reliability Chapter of Boston, Providence, and New Hampshire was entitled, “ESD Damage – A Surprisingly Dominant Quality and Reliability Failure Mechanism.” As always, Ted presented important information in a very understandable way. When electronic failures are categorized, one of the most common is “No Defect Found,” or “Unknown Root Cause,” or something similar. Many of these failures, when examined more closely, are due to ESD, with the result that ESD is one of the most common causes of electronics failures. As electronics become smaller and more sensitive, this topic has become one of the most important in electronics reliability. Ted further explained the differences between various ESD models; an important topic to understand when

outsourcing ESD testing for the purpose of determined the ESD Class of the component, such as ESD Class 1 or ESD Class 0. He further explained how electronics may be more prone to ESD damage when on a board or when a board has a cable attached than when the component is being handled separately.

During this December meeting, the annual Past Chairs dinner was celebrated as well, at which we honored those who have served in the past as the Chair of the IEEE Reliability Chapter of Boston, Providence, and New Hampshire. We had five past Chairs in attendance, and another two who sent their regards but could not attend. In attendance were Don Markuson, chair from 1990 - 1991 & 1995 – 1996, Giora Kedem, chair from 1997-1999, Jeff Clark, chair from 2000-2003 & 2005, Aaron Dermarderosian Jr., chair from 2006 – 2008, and Ramon De la Cruz, our most recent chair, from 2009-2011. Gene Bridgers, Chair from 1986-1987 sent his greetings from North Carolina and Avery Hevesh, Chair from 1968-1970 sent his greetings from San Diego. This meeting had a very good turnout of 47 people.



Figure 1. Ted Danglemayer during his presentation at MIT LL.



Figure 2. Audience at the December Meeting.

Awards & Recognitions

“2013 AdCom Officer Election Results”

Chairman	Dan Weidman
Vice-Chair	Ramon De la Cruz
Secretary	Aaron Dermarderosian
Treasurer	Don Markuson

The Joint Section Reliability Chapter collected a total of 19 validated member votes, all in favor of the officer nominees. Congratulations to the IEEE Boston Reliability Chapter 2013 AdCom Officers.

Upcoming Activities

“Photonic Magnetometry Measurement at a (Short) Distance” by Chris Sataline, MIT LL.



Chris Sataline

Join us for this interesting and exciting talk on Photonics, Photonic measurement technology, and Reliability within industry and academia. Chris will give you an insight on how he has taken photonic magnetometry measurement to another level, as he explains in the abstract: *“In order to explore making measurements of magnetic fields at standoff distances, an optical magnetometry testbed has been established based on coherent population trapping effects in rubidium. Design and launch of satellites is itself costly, and their routine maintenance remains unlikely at present. Optimizing on-orbit lifetimes demands an understanding of the space weather environment to which the spacecraft will be subject. Sensitive measurements of magnetic fields are often contaminated by electromagnetic noise from the system itself. To mitigate these effects, the Oersted satellite, for example, incorporates an eight meter boom to place its magnetometer away from the satellite’s electrical systems. Eliminating the necessity of such a boom would reduce the weight and overall cost of satellite magnetometers.....* **Full notice on Reliability Chapter website**

Location:

Building: Main Cafeteria
MIT Lincoln Laboratory
244 Wood Street
Lexington, Massachusetts
United States

Date: 13-February-2013

Time: 05:30PM to 08:00PM (2.50 hours) **All times are:** US/Eastern

Registration: On-line at the IEEE Reliability joint section chapter website, <http://www.ieee.org/bostonrel>

Registration deadline for this meeting is COB Monday February 11th, 2013

“Electrical Overstress (EOS), the sources and solutions” by Terry Welsher, Dangelmayer Associates.



Terry Welsher

The class of device failures typically called Electrical Overstress (EOS) has been getting increased attention in the last two years. Historically, the effects of ESD on integrated circuits, particularly handling in the factory, have received much attention in technical literature, standards bodies and educational workshops and tutorials.

This presentation will discuss the differences and similarities between ESD and EOS caused by other sources (excessive voltage, current or power). The current state of EOS prevention will be reviewed with examples and case histories. The presentation will also explore ESD events that can be misdiagnosed as power-induced EOS (Charged-Board and Cable Discharge Events). Recent work in standards organizations and other industry groups will be reviewed and some mitigation techniques will be presented.

Location:

Building: Main Cafeteria
MIT Lincoln Laboratory
244 Wood Street
Lexington, Massachusetts
United States

Date: 20-March-2013

Time: 05:30PM to 08:00PM (2.50 hours) **All times are:** US/Eastern

Registration: On-line at the IEEE Reliability joint section chapter website, <http://www.ieee.org/bostonrel>

“Biological Systems – How Reliably Can They Be Engineered?” by Peter Carr, MIT Lincoln Laboratory.



Peter Carr

Dr. Peter Carr leads the Synthetic Biology research program at MIT Lincoln Laboratory. This research emphasizes seeks to expand the reach of how living systems can be engineered. Current areas of interest include: 1) rapid prototyping of engineered genetic systems; 2) re-engineering the genetic code of microbes, providing plug-and-play capabilities for non-natural amino acids, and constructing "genetic firewalls" to block gene flow to and from of these organisms; 3) error correction methods for de novo synthesized DNA; 4) Control systems and safety standards for engineered organisms. He received his bachelor's degree in Biochemistry from Harvard College and his Ph.D. in Biochemistry and Molecular Biophysics from Columbia University.

The IEEE Reliability Society Joint Section Chapter
– Boston - New Hampshire - Providence
February Newsletter is available at the following link:

[Boston - New Hampshire - Providence Joint Chapter Newsletter](http://ewh.ieee.org/r1/boston/r1/newsletters/boston_chapter_newsletter_feb13.pdf)

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