

32nd Annual Time and Frequency Metrology Seminar

June 12 - 15, 2007

Day 1 - Tuesday, June 12:

- 8:00-8:45 *Registration and Check-in:* [NIST BOULDER LABORATORIES](#),
325 Broadway, Boulder, CO
 - 8:45-9:00 *Announcements*
 - 9:00-10:10 David Howe -- **Frequency, Time, Noise, Stability, Accuracy, Calibration, Traceability, Certification, Quality Assurance**
 - 10:10-10:30 **Break**
 - 10:30-11:30 David Allan -- **Introduction to Time Domain Measurement Standards**
 - 11:30-1:15 **Lunch**
 - 1:15-3:00 Marc Weiss -- **Time Domain Representation of Oscillator Performance**
 - 3:00-3:20 **Break**
 - 3:20-5:00 Fred Walls -- **Quartz Crystal Resonators and Oscillators**
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Day 2 - Wednesday, June 13:

- 8:15-8:30 *Announcements*
- 8:30-9:15 Jennifer Taylor -- **Long-Term Frequency Stability Analysis: Thêo1**
- 9:15-10:00 David Howe -- **Frequency Domain Representations of Performance**
- 10:00-10:20 **Break**
- 10:20-11:20 Archita Hati -- **State-of-the-Art PM & AM Noise Measurements with Measurement Examples and Analysis Techniques**
- 11:20-12:00 Sam Stein -- **Digital Measurement of Precision Oscillators**
- 12:00-1:15 **Lunch**

Lab Demo's:

- 1:15-2:00 Andrew Novick -- **Time and Frequency Measurements**
- 2:00-2:50 Jim Gray -- **Measurements in the Time Domain (Allan Deviation Measurements)**
- 2:50-3:10 **Break**
- 3:10-4:00 Craig Nelson -- **PM & AM Noise Measurements**

Reception and Dinner:

- 6:00-9:00 **Red Lion Inn**

Day 3 - Thursday, June 14:

- 8:15-8:30 *Announcements*
- 8:30-9:20 Tom Parker -- **Introduction to Atomic Frequency Standards**
- 9:20-10:10 Tom Heavner -- **Current and Next Generation Cesium Fountains at NIST**
- 10:10-10:30 **Break**
- 10:30-11:15 Till Rosenband -- **The Mercury Ion Optical Clock**
- 11:15-12:00 Tara Fortier -- **Frequency Division from Optical to Microwave**
- 12:00-1:30 **Lunch**
- 1:30-2:30 Marc Weiss -- **The Global Positioning System and How It Works**
- 2:30-3:20 Victor Zhang -- **Time and Frequency Transfer using GPS**
- 3:20-3:40 **Break**
- 3:40-4:20 Kristine Larson -- **Time and Frequency Comparisons Using GPS Carrier Phase Measurements**
- 4:20-5:00 Marc Weiss -- **GPS Future, Operations & Additional Services**

Evening Session:

- 7:00-7:40 Demetrios Matsakis – **Pulsars and Time**
- 7:40-8:20 Mike Lombardi -- **NIST Remote Calibration Methods and Services**
- 8:20-9:00 David Howe -- **Stability Analysis Software: Primer and Examples**
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Day 4 - Friday, June 15:

- 8:00-8:50 Judah Levine -- **Design Considerations of Accurate and Stable Reference Time Scales**
 - 8:50-9:40 Neil Ashby -- **Navigation and Timing Using X-Ray Pulsars**
 - 9:40-10:00 Craig Nelson -- **Opto-Electronic Oscillators**
 - 10:00-10:20 **Break**
 - 10:20-11:10 Alan Brannon -- **Low-power, Microfabricated Oscillators for Chip-Scale Atomic Clocks**
 - 11:10-12:00 Tom O'Brian -- **Trends in Time Generation and Distribution**
 - 12:00-12:15 **Conclusions and Discussion**
 - 2:00-4:00 *Tour of NIST Laboratory Facilities*
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