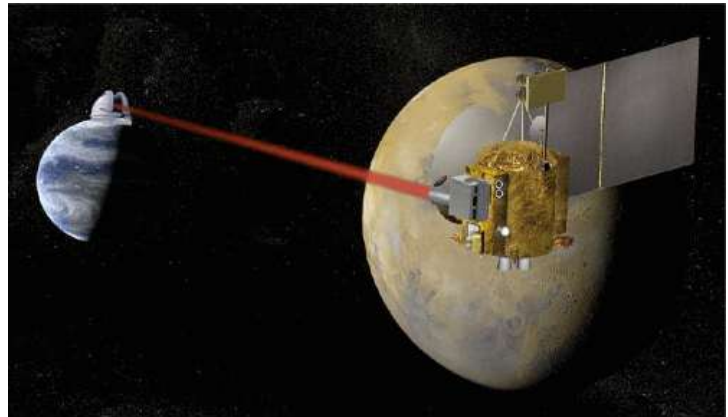


November 9, 2011

## Signaling on the Deep-Space Optical Channel

Dr. Bruce Moision, JPL

**Abstract:** In this talk we illustrate the design of a signaling scheme for a deep space noncoherent infrared (optical) channel. We discuss the primary impairments to communicating over the link, and how they impact the choice of modulation, error correction coding, and interleaving. We draw comparisons and contrasts with the deep space coherent microwave channel, over which missions current transmit telemetry data.



### About our speaker: **Dr. Bruce Moision**

received his PhD from UCSD in 1999, spent a year at Lucent Technologies, and has been with the Information Processing group at the Jet Propulsion Laboratory since 2001. His primary areas of expertise are in information and communication theory, parameter estimation and constrained modulation. His work at JPL has focused on the design and implementation of deep-space optical communications links, in the areas of modulation, coding, parameter estimation, and link-budgeting/analysis. He designed the coded modulation and signaling schemes for JPL's current prototype optical link, and guided the hardware implementation of the prototype error-correction-code. He co-designed the code that is scheduled to be used on the Lunar Laser Communications Demonstration. He has co-authored two book chapters on coding and modulation for free space optical channels, and has been awarded 19 NASA Tech Briefs for technical innovations.



**Wednesday, November 9, 2011**

**Reception: 6:00; Dinner: 7:00; Talk: 8:00**

**Meal: Buffet Style**

**Cost: \$25 (OSSC Student Members are Free!)**

**Synopsys, Inc., Optical Solutions Group  
(formerly Optical Research Associates)**

**3280 East Foothill Blvd., Suite 300**

**Pasadena, CA 91107**

**626-795-9101**

**Location is across the Street from the Gold  
Line Sierra Madre Villa Station.**

On-line Registration: [www.osscc.org](http://www.osscc.org) or  
Contact: [Brent Bergner](mailto:Brent.Bergner@osscc.org), OSSC Arrangements  
Chair. [Events@osscc.org](mailto:Events@osscc.org). 949-260-9900 x33

**Please post this notice and invite your friends & colleagues to attend!**