Physics Colloquium

Thursday, Nov 17th at 3:30 pm in SC 234

Dr. Timothy Yarnall

MIT Lincoln Laboratory

High-Rate Laser Communications to the Moon and Back

Radio waves have been the standard method for deep-space communications since the Apollo mission. Over the past decades, scientists at MIT Lincoln Laboratory have been working to develop free-space optical communications systems, and the recent success of the Lunar Laser Communication Demonstration (LLCD) program will clearly revolutionize future deep-space communication systems. The LLCD demonstrated record-breaking optical up and down links between Earth and the Lunar Lasercom Space Terminal (LLST) payload on NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) satellite orbiting the Moon. The system included an innovative space terminal, a novel ground terminal, two major upgrades of existing ground terminals, and a capable and flexible ground operations infrastructure. This talk will give an overview of the technologies involved in the demonstration, the system architecture, the basic operations of both the link and the whole system, and some typical results.

Refreshments at 3:00 pm in SC 103