



Seminar & Discussion

July 11th, 2011

Room 1008 Bldg 937 10:00AM



A new Terahertz source concept

- Dr. Adam Bushmaker

Terahertz (THz) technology is a newly emerging field that has numerous applications in the civil, defense and commercial markets. Despite the promising applications of this technology, compact, reliable sources of THz waves are limited. A new THz source is proposed, in which an optical cavity is coupled to a THz electromagnetic resonator through a non-linear material, and pumped with a detuned CW laser, causing the THz resonator to oscillate through a parametric instability. This process can be viewed as down-conversion of the optical pump photon to a lower energy optical photon and a THz photon through the parametric interaction. Because down-conversion is necessary to have gain, it is important that the laser be tuned to the high-frequency side of the optical resonance. Several aspects of device operation are analyzed using the Comsol Multiphysics software package for device implemented using a metallic THz split ring resonator coupled to a nonlinear optical etalon.

**Microelectronics
Technology
Department**

**The Aerospace
Corporation**

**Attendees from
Aerospace -**

Dr. Adam Bushmaker -
MTS, inventor of the approach to
be discussed at the meeting and
primary presenter.
Dr. Joel Schulman -
Sr. Scientist
Dr. Caroline Gee -
Res. Scientist
Microelectronics Technology
Dept.

**Refreshments
Served**