Contribution ID: **451** Type: **Contributed Oral Presentation**

Tunable Broadband Radiation Generated Via Ultrafast Laser Illumination of an Inductively Charged Superconducting Ring

Wednesday 12 July 2017 12:15 (15 minutes)

It is well established that superconducting materials will emit microwave/terahertz radiation when illuminated with a femtosecond infrared laser pulse. Typically this phenomena is examined by illuminating a voltage biased superconducting thin film bridge. In this investigation an inductively charged superconducting thin film ring is considered. We believe the configuration lends itself to a simple compact microwave emitter device as the antenna plays the part of the waveguide and power supply, and contact heating between the current leads and the superconductor are now eliminated. We find that the emitted energy of this system displays a power-law dependence with increasing current, laser energy and illumination area, and shows a frequency dependence on the system dimension as well as a well-defined polarization direction. Results illustrate the rich and complex dynamics that span the optical, terahertz and microwave regimes.

Author: BULLARD, Thomas (UES Inc - AFRL/RQQM)

Co-authors: BULMER, John (University of Cambridge); REED, Jennifer (UES Inc. - AFRL/RXAP); MURPHY, John (University of dayton Research Institute); HAUGAN, Timothy (U.S. Air Force Research Laboratory)

Presenter: BULLARD, Thomas (UES Inc - AFRL/RQQM)

Session Classification: M3OrD - Focused Session: Cryogenic Microelectronics & Materials I