



# Institute for Materials Science

UNCLASSIFIED

## IMS Materials Summer School 2017



**John Singleton**  
**National High Magnetic Field Laboratory**  
**Los Alamos National Laboratory**

### **Pulsars, warp factor 3 and the Battle of Maxia**

Commercial antennas inspired by faster-than-light motion in our Universe

**Thursday, July 20, 2017**

**1:00 - 2:00 - Physics Auditorium**

Physics Auditorium (TA3-215-182)

**Abstract:** Since the publication of Einstein's Special Theory of Relativity, few sensible scientists have thought about entities that can move faster than the speed of light in a vacuum. However, this lecture will describe how electromagnetic disturbances known as polarization currents can become superluminal – i.e., exceed light speed - very easily indeed. I will describe our benchtop demonstrations of such effects, plus observations from the visible universe that are almost certainly due to the emissions from accelerated, superluminal polarization currents. The lecture will also cover our efforts to make commercial antennas based on superluminal sources (mini pulsars!), and the applications that these machines may have.

**Bio:** John Singleton is a condensed-matter physicist who works at the National High Magnetic Field Laboratory's Pulsed Field Facility. John came to Los Alamos in 2002 after running a large research group and teaching at Oxford University for 12 years. He has around 450 peer-reviewed publications on the use of high magnetic fields to unravel the quantum mechanics of electrons in solids, and has written a popular university textbook about electronic properties of materials. Over the past decade, he has filed several patents and won prizes for the development of new types of antenna inspired by astronomical objects. He is a LANL Fellow, Fellow of the APS and Fellow of the Institute of Physics.

**The IMS Materials Summer School** focuses on Materials Science at Los Alamos National Laboratory and is designed to expose our visitors to the broad range of great materials science performed at the Lab. Through the course of **seven talks** and **three site visits**, students will have a unique opportunity to learn about LANL directly from our **top scientists** and participate in **facility tours**.

For general information contact:

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