# *Colloquium*

## Department of Physics

## Measuring and Modeling Variability in Quasars and Blazars

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### Abstract

Active galactic nuclei, including quasars, are extraordinarily powerful, emitting up to thousands of time as much energy as all the stars in their host galaxies. A minority of them also eject relativistic jets of plasma that form giant radio lobes. All active galactic nuclei are characterized by variability and blazars exhibit the strongest fluctuations. This enhanced variability is due to Doppler boosting of the flux emitted by radio jets that point close to our line of sight. We have been measuring variability of quasars and blazars in the optical band from various ground-based telescopes for the past 20 years and have more recently employed the Kepler satellite as well as various X-ray telescopes to gather dense, uniformly spaced data. After setting the context, we will present some of these results, as well as our numerical simulations of variations of radio flux from the turbulent regions behind shocks in the jets.

**Monday, March 9, 2015 at 3:00pm**
**SERC, Room 110A**
**Refreshments served at 2:45pm**