



5<sup>th</sup> Annual

# JOHN BAHCALL LECTURE

TUESDAY • 22 FEBRUARY 2011



## PROF. ROGER BLANDFORD

Director, Kavli Institute for Particle Astrophysics & Cosmology,  
Stanford University

**“Measuring the Hubble Constant using Gravitational Lenses”**

**3:00 PM**

in the John Bachall Auditorium of STScI  
3700 San Martin Drive • Baltimore, MD 21218

**Abstract:** As first pointed out by Refsdal, multiple images of a variable source created by a gravitational lens can provide a measurement of the Hubble constant. This method has been applied to many gravitational lenses with outcomes that have been as varied as those resulting from traditional approaches. However, recent studies have been more thorough and resulted in more accurate and credible measurements. The successes and remaining challenges of this approach will be summarized paying particular attention to the analysis of fifteen years of observation of B1608+656, which yielded a result  $H_0 = 71 \pm 3 \text{ km s}^{-1} \text{ Mpc}^{-1}$ , making some strong assumptions about the underlying cosmology and the modeling. Currently the accuracy of this measurement appears to be limited by the effects of inhomogeneity along the line of sight on ray propagation. A new formalism and observational program for handling this will be described.

**Reception to Follow Lecture  
Café Azafran**