## Imaging Variable Stars With HST *(Abstract)*

**Margarita Karovska**
*Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138; mkarovska@cfa.harvard.edu*

*Presented at the 100th Spring Meeting of the AAVSO, May 23, 2011*

**Abstract** The Hubble Space Telescope (HST) observations of astronomical sources, ranging from objects in our solar system to objects in the early Universe, have revolutionized our knowledge of the Universe its origins and contents. I highlight results from HST observations of variable stars obtained during the past twenty or so years. Multiwavelength observations of numerous variable stars and stellar systems were obtained using the superb HST imaging capabilities and its unprecedented angular resolution, especially in the UV and optical. The HST provided the first detailed images probing the structure of variable stars including their atmospheres and circumstellar environments. AAVSO observations and light curves have been critical for scheduling of many of these observations and provided important information and context for understanding of the imaging results of many variable sources. I describe the scientific results from the imaging observations of variable stars including AGBs, Miras, Cepheids, semiregular variables (including supergiants and giants), YSOs and interacting stellar systems with a variable stellar components. These results have led to an unprecedented understanding of the spatial and temporal characteristics of these objects and their place in the stellar evolutionary chains, and in the larger context of the dynamic evolving Universe.

## Probing Mira Atmospheres Using Optical Interferometric Techniques *(Abstract)*

**Sam Ragland**
*W. M. Keck Observatory, 65-1120 Mamalahoa Highway, Kamuela, HI 96743; sragland@keck.hawaii.edu*

*Presented at the 100th Spring Meeting of the AAVSO, May 23, 2011*

**Abstract** Modern optical interferometric observations of Mira atmospheres are discussed. The earlier near-infrared closure-phase measurements of a sample of Asymptotic Giant Branch (AGB) stars and subsequent imaging observations of a handful of brighter ones show that asymmetry is common in the cool atmospheres of late-type stars. The potential of optical interferometric observations in conjunction with radio interferometric observations in studying the structure and kinematics of the envelope around Mira stars are highlighted.

We explore the use of other interferometric observables, such as, (1) null-leakage in the mid-infrared combined with near-infrared squared-visibilities in constraining the temperature structure of the extended atmosphere of Mira stars, and (2) differential phase in detecting asymmetry in the molecular and dusty shells of Mira stars.

## Spots, Eclipses, and Pulsation: the Interplay of Photometry and Optical Interferometric Imaging *(Abstract)*

**Brian K. Kloppenborg**
*2499 S. Colorado Boulevard, Apt. 803, Denver, CO 80222;*
*brian.kloppenborg@du.edu*

*Presented at the 100th Spring Meeting of the AAVSO, May 23, 2011*

**Abstract** Present optical/IR interferometers like CHARA are not only capable of probing the environment surrounding stars, but also resolving surface details on the stars themselves. Because of this, interferometers can produce results on the classical topics of photometry: namely pulsation, eclipses, and star spots. In this talk I discuss these three common areas, and how interferometry and photometry can be used in conjunction to yield superior results.