

.....

# CSO SPECIAL TECHNICAL SEMINAR

.....

**TIME: 4:00PM, Thursday 4<sup>th</sup> October 2007**

**PLACE: CSO Conference Room**

**TITLE: Update to the CSO Submillimeter Active Optics System**

**SPEAKER: Melanie Leong**  
***Caltech Submillimeter Observatory***

**ABSTRACT:**

The Caltech Submillimeter Observatory's (CSO's) Submillimeter Active Optics System is an open loop real time system that corrects the dish surface figure for imperfections and gravitational deformations as the dish moves in elevation during observations. This improvement in the telescope's aperture efficiency aids observations in the shorter wavelengths, specifically in the 350- $\mu$ m-wavelength range. Simplicity, attention to detail, and perseverance were the keys to the success of this unique system.

The CSO's primary is part of a Robert Leighton telescope design, consisting of 84 hexagonal panels forming a 10.4-meter primary dish. There are 99 steel rod standoffs that interface the backing structure to the back of the primary. It is on these standoffs where heating and cooling assemblies are mounted and implemented to lengthen or shorten the standoffs to desired lengths.

Holography maps were used to build a correction table to determine the amount of length and location of change on the primary. Implementation of thermal electric devices enables the adjustability for each standoff.

The CSO's Submillimeter Active Optics System has been in use since February 2003. Since then, new discoveries of distant galaxies or sharper detail of known objects have been obtained. These will be presented during this talk.

By holography, the smoothness of the dish is better than 10 microns RMS from zenith angles of 5 to 63 degrees. The present percent improvement to the primary's surface is as high as 74%, with an average of 60% improvement.

Preliminary performance improvements have been found to compensate for SHARCII's new mounting location, from the Cassegrain focus to a second Nasmyth location, N2. SHARCII is an 384 pixel submillimeter high angular resolution camera.

.....

Caltech Submillimeter Observatory (CSO) Hilo office is located in the University Park, at the corner of Komohana – Nowelo Street.

111 Nowelo Street, Hilo HI 96720 (Phone: (808) 935-1909 )