

# The CCAT News

The Cornell Caltech Atacama Telescope

Issue 2 October 2006

## Site Testing on Cerro Chajnantor



*View from the CCAT Site: Photo by George Gull*

Simon Radford has installed a new satellite phone link to the CCAT site testing apparatus on C. Chajnantor which provides a more robust link and higher data rates. Data continues to indicate that the site, which is approximately 50 meters below the summit on the Northeast side of the mountain has significantly reduced atmospheric water relative to the ALMA site. Notably the wind velocities are also less than at the plateau, presumably as the site is protected by the summit from the prevailing westerly winds. Testing will continue and we anticipate that geotechnical surveys will be initiated some time during 2007.



*Mero Truss for MAGIC Primary Mirror*



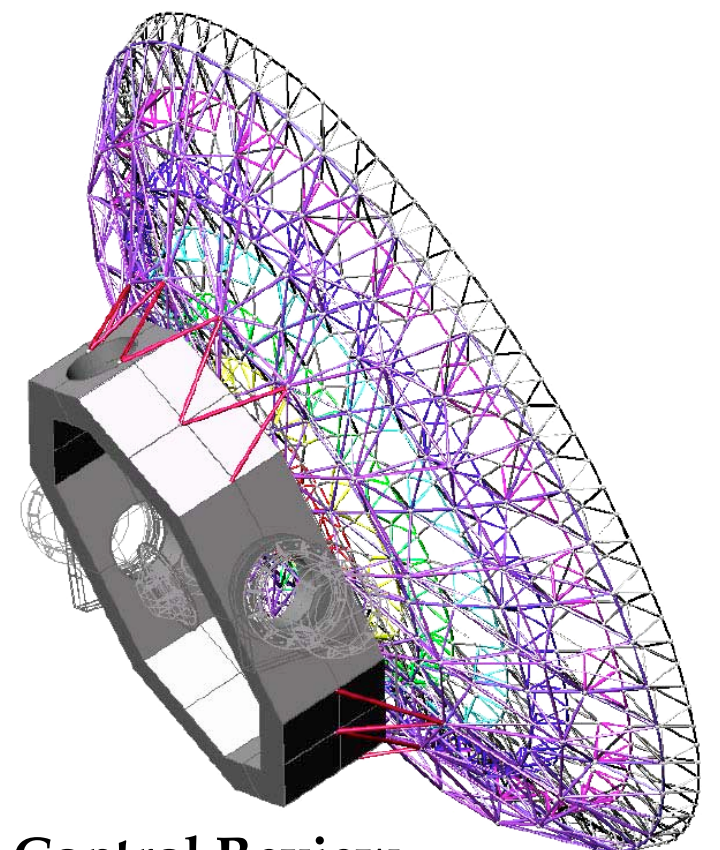
*Media Lario Mirror Panel*

## CCAT Visits Contractors

Recent visits were made to contractors who are being considered to compete to provide key CCAT systems. On 28 September J. Zmuidzinas, S. Radford, and T. Sebring visited Adaptive Optics Associates in Cambridge, MA. AOA has proposed a laser based primary mirror panel angle sensing scheme that could improve mirror performance. In early October, D. Woody, J. Hong, and T. Sebring visited Media Lario in Italy and Mero Structures in Germany. Media Lario is providing primary mirror panels in Ni/AL composite for the European ALMA antennas and the LMT. Mero Structures specialty is space frame trusses and they supplied the truss to the Hobby Eberly Telescope and more recently a CFRP/Al truss for the MAGIC atmospheric imaging Cherenkov telescope on La Palma. These contractors have all agreed to develop conceptual designs and perform analysis in preparation for competing for CCAT contracts.

## Primary Mirror Truss Study Completed

Under funding from JPL, Stutzki Engineering has completed a conceptual design and analysis study of the CCAT Primary Mirror Truss. The design incorporates tubular steel struts and machined forged steel connectors. The truss would weigh 17.2 metric tons and support 5 tons of mirror panels. The truss has 2892 structural members and finite element analysis provides a first natural frequency of 5.3 Hertz. Deformation of the truss over the full range of gravitational loading is estimated at 4-5 mm, well within the range of the panel actuators anticipated. The results from this design and analysis will be incorporated into the mirror control model being developed by JPL and Caltech. Results of the study have been provided to Mero TSK for incorporation in their production concept design.



## Symposium Honors R. Giovanelli

Clark Hall at Cornell will be the site of a special symposium celebrating the 60<sup>th</sup> birthday of CCAT Director Riccardo Giovanelli. A pre-symposium celebration on the evening of Oct. 13 will be followed on Oct. 14<sup>th</sup> by a full day of science talks.

Details can be had by emailing

[karla@astro.cornell.edu](mailto:karla@astro.cornell.edu).

## Mirror Control Review

On October 26<sup>th</sup> there will be a review of the JPL/Caltech Mirror Modeling Effort at JPL. The meeting will also include presentations by contractors including Fogale Nanotech, a provider of edge sensors for segmented mirror systems, and Adaptive Optics Associates.

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