Hubble Space Telescope

Cycle 17 GTO/COS Proposal

COS-GTO: Deep Search for an Oxygen Atmosphere on Callisto

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Scientific Category: SOLAR SYSTEM

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Abstract

We plan a deep search for 1304Å and 1356Å O emission from Callisto, to detect or place strong limits on the presence of a hypothesized O2 atmosphere on this moon (Liang et al. 2005). Tenuous oxygen atmospheres on Europa and Ganymede have been detected by HST using these emission lines, but searches for O emission from Callisto have not been successful (Strobel et al. 2002). The Liang et al. models predict O emission at levels comparable to the Strobel et al. upper limit, so the improved sensitivity of COS may be able to detect the emission, and thus Calllisto's O2 atmosphere, for the first time. We plan four orbits with the G130M grating at 1300Å in order to generate sufficient S/N for a robust result.

Investigators:

	Investigator	Institution	Country
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Number of investigators: 2

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Target Summary:

Target	RA	Dec	Magnitude
CALLISTO			V = 5.7 +/- 1.0, F(1356) = 15 R

Observing Summary:

Target	Config Mode and Spectral Elements	Flags	Orbits
CALLISTO	COS/FUV Spectroscopic G130M		4

Total prime orbits: 4

This is a COS GTO project, no scientific justification is needed.