VARIATIONS IN BRIGHTNESS OVER CALLISTO'S SURFACE AS MEASURED BY THE GALILEO ULTRAVIOLET SPECTROMETER. A. R. Hendrix[1], C. A. Barth[1], A. L. Lane[2], C. W. Hord[1], A. I. F. Stewart[1], K. E. Simmons[1], W. E. McClintock[1], J. M. Ajello[2], K. L. Naviaux[2], J. J. Aiello[2], W. K. Tobiska[2], S. K. Stephens[2]; [1]Laboratory for Atmospheric and Space Physics, University of Colorado at Boulder; hendrix@pisces.colorado.edu; [2]Jet Propulsion Laboratory, California Institute of Technology.

The Galileo UVS observed the multi-ring basin Asgard on Callisto at three different spatial resolutions during Galileo's third orbit of Jupiter in November 1996. Asgard is an ancient ring structure centered at 30° N, 140° W. The UVS F-channel, which covers the 2000 Å - 3200 Å wavelength region, was used for these observations.

These data represent the first-ever disk-resolved ultraviolet observations of Callisto. This gives us the opportunity to seek spectral variations across the surface that may indicate differences in composition or grain size. We examine the spectral variations across the crater to look for evidence of debris throughout the rings and surrounding regions. We also look for variations in brightness in the polar regions. We compare the spectra measured throughout the Asgard basin to those obtained from the rest of Callisto and to the highly resolved observations of the western rings of the crater.

At 87 R_C from Callisto, the UVS performed the GLOBAL observation set, in which the slit was scanned across the surface at three latitudes centered on 150° longitude; the F-channel instantaneous field of view (FOV) covered a 365 km x 1458 km region. The ASGARD observation was performed at 18 R_C from Callisto. Three different latitudes were scanned, covering the region just south of the crater structure, the lower rings of the crater, and finally the central portion of the the Asgard structure and the neighboring Tornarsuk crater; the FOV footprint was 76 x 304 km. At 8 R_C from Callisto, the UVS performed the RINGS observation, a scan across the western rings of the Asgard crater when the FOV footprint was 35 x 138 km.

From the GLOBAL data set, we have determined the albedo of the subsolar equatorial region near 110° longitude which we use as a standard to which to compare data from other regions on the body. This

subsolar region has an albedo that decreases from 0.09 at 3200 Å to 0.03 at 2200 Å.

In the GLOBAL data set, the FOV centered on 55°N, 120° W included the bright crater Burr (and possibly other craters), north of Asgard, which increased the brightness measured. That region was measured to be 1.9 times brighter than our subsolar reference region. The GLOBAL data set also reveals a region of relative brightness around 60° S, 120° W, where the albedo is 1.5 times brighter than our subsolar reference region. This increase in albedo may indicate the presence of another bright crater.

At the higher resolution of the ASGARD observation set, we find that the Asgard basin is brighter than the surrounding area (2.7 times brighter than our subsolar reference region). The neighboring Tornarsuk crater (just east of Asgard) is particularly bright, 9 times brighter than the subsolar reference region (accounting for the fact that Tornarsuk filled approximately 35% of the FOV). We note an increase in brightness at the shorter wavelengths measured in the center of the Asgard basin. This may indicate smaller particles which preferentially scatter light at shorter wavelengths.

The highest spatial resolution observations, the RINGS data set, measured the western rings of Asgard. We find that the rings on the western side of the multi-ring basin are brighter than the surrounding area. These rings are 1.8 times brighter than the equatorial reference region.