



HST/STIS observation of Ganymede's aurora: Investigating the variability of the auroral ovals

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We analyze the variability of Ganymede's FUV auroral ovals using spectral images acquired during two visits in 2010 and 2011 with Hubble's Space Telescope Imaging Spectrograph (HST/STIS) when Ganymede was at eastern elongation. The observed electron-impact-excited auroral emissions from Ganymede's O₂ atmosphere are thought to be driven by electron acceleration by strong field-aligned currents at the separatrix, i.e., at the boundary area between open and closed magnetic field lines of Ganymede's mini-magnetosphere. The location of the auroral ovals correlates with the intersection of this separatrix and the satellite's surface and therefore strongly depends on the interaction between Ganymede's magnetic field and atmosphere with the local time-variable plasma environment. In our study we particularly analyze the latitudinal positions of the auroral ovals in order to better understand the correlation with the plasma environment. The HST campaign was designed such that the full range of Ganymede's magnetic-latitudinal positions within Jupiter's current sheet is covered. We provide a mapping of auroral emission distribution and study the auroral brightness as a function of Ganymede's position in Jupiter's magnetosphere.