



New results on the UV Io footprint morphology and brightness

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The Io UV footprint is an auroral feature on Jupiter caused by the electromagnetic interaction between the satellite Io and the Jovian magnetosphere. The footprint morphology and the spots multiplicity have been found to vary with the location of Io in the plasma torus. We show recent Hubble Space Telescope (HST) images that reveal a new feature in the footprint: a faint leading spot that appears upstream of the main spot in one hemisphere when Io is close to the opposite border of the torus. A possible interpretation relates the leading spots and one downward secondary spot to electron beams generated by downstream currents in the opposite hemisphere. We also present a 3D model of the Io footprint emissions in the 100 to 170 nm wavelength range. Comparisons between this model and the HST images enable us to study the actual size and shape of the different Io footprint features. It also allows to measure the footprint brightness on the new images with a better estimation of the geometric effects (e.g. limb brightening). The observations presented here provide critical constraints to the Io-plasma torus interaction modelling.