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The two faces of the Jovian UV aurorae

Bertrand Bonfond[1], Denis Grodent[1], Benjamin Palmaerts[1], Randy Gladstone[2], Sarah Badman[3], John Clarke[4], Jean-Claude Gérard[1], Rohini Giles[2], Thomas Greathouse[2], Kamolporn Haewsantati[1,5], Vincent Hue[2], Joshua Kammer[2], Jonathan Nichols[6], Guillaume Sicorello[1], Suwicha Wannawichian[5], and Zhonghua Yao[7,1]

[1]Université de Liège, STAR Institute, Liège, Belgium (b.bonfond@uliege.be)
[2]Southwest Research Institute, San Antonio, USA
[3]Lancaster University, Lancaster, United Kingdom
[4]Boston University, Boston, USA
[5]Chiang Mai University, Chiang Mai, Thaïland
[6]University of Leicester, Leicester, United Kingdom
[7]Key Laboratory of Earth and Planetary Physics, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China

Being mostly connected via closed magnetic field lines, the aurorae at the two poles display two broadly similar signatures of the same magnetospheric processes. However, differences are sometimes observed, indicative of asymmetries either in the polar regions (e.g. different solar illumination, magnetic anomalies, etc.) or in the magnetosphere (e.g. twisting of the magnetotail), thus showing two complementary sides of the magnetosphere-ionosphere coupling.

Whatever the planet, seeing the aurorae on both poles at the same time is challenging. Either both polar regions can be seen at once, but then only from the side, with poor spatial coverage (especially close and beyond the limb), or we need (at least) two observatories. Here we use the latter option to observe the two faces of the UV aurorae on Jupiter. In the last years, several Hubble Space Telescope observations with the Space Telescope Imaging Spectrograph (STIS) have been planned during close-up perijove observations of the poles with the UV spectrograph (UVS) on board the Juno spacecraft. The aurorae at Jupiter can be divided into three main components, with the Main Emissions, a quasi-continuous, but sometimes irregular, ribbon of auroral emissions, delimitating the outer emissions outside of it and the polar emissions inside of it. We compare the global morphology and the relative power emitted by the different auroral features in these three regions. Former studies also indicated that synchronized quasi-periodic flares could be observed in both hemispheres and we will look after similar events in this new dataset. Finally, even if the observations are delayed by approximately one hour, we can still compare the mean emitted power before (north) and after (south) each Juno perijove to look for a global trend.