



Quasi-periodic flares in Jupiter's aurora : new results

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Two recent Hubble Space Telescope observation campaigns have been dedicated to the Jovian Far-UV aurora (GO 12883 – PI: D. Grodent and GO 13035 – PI: S. Badman). Both of them made use of the Time-Tag mode of the Space Telescope Imaging Spectrograph (STIS), a high time resolution mode which allows to observe temporal variations on timescales of tens of seconds.

In the present study, we focus on sudden and spectacular bursts of auroral emissions taking place in the active region located poleward of the main emissions and called “flares”. A previous study, based on only two image sequences acquired with rather unfavorable viewing angles, showed that these flares could reappear quasi-periodically on time scales of 2-3 minutes. Phenomena with similar timescales have been identified by in-situ spacecraft in relativistic electron and radio data as well as in reconnection signatures, for example. But the physical mechanism behind these ubiquitous signatures remains to be unveiled. Here we make use of the most recent and much larger data set to study in further details the occurrence rate, the period, the location, the extent and the motion of these quasi-periodic flares and to compare their behavior in both hemispheres. Quantifying these parameters allows us to narrow down the possibilities among likely explanations and provide a tentative scenario for these short timescale quasi-periodic features.