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Observations of Saturn Kilometric Radiation during the Saturn Auroral Campaign of Spring 2013

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Abstract

During April and May 2013, a concerted effort to study Saturn's auroras was mounted using multi-wavelength observations from Cassini and a number of Earth-based observations. It has been shown that the integrated power of Saturn Kilometric Radiation (SKR) provides a good proxy for auroral activity and there is at least a qualitative correlation between auroral brightness and SKR intensity. While the SKR observations can be complicated by beaming issues, they provide a reasonable, continuous context within which to place other observations. For example, during the first Hubble Space Telescope visit on 5 April 2013, a brightened poleward expansion of the UV aurora was observed while the SKR intensity was elevated during most of the day as shown in Figure 1. In the following, more extended interval of the campaign over 19 – 23 April 2013, the SKR intensity is low for the first few days but intensifies later in the interval, reflecting increasing UV auroral activity as seen by Hubble. In this paper we will present the SKR intensities over time intervals of the auroral campaign along with other Cassini and Earth-based observations for selected events.

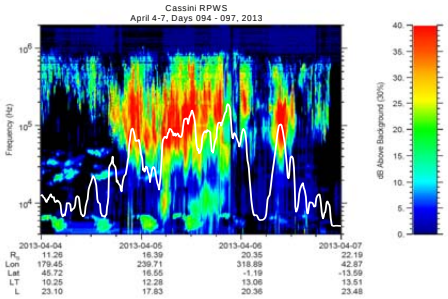

Figure 1: Example of SKR measurements during the April 4 - 7, 2013 interval. White trace is relative integrated power from 20 kHz to 1 MHz.