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Comparison of Saturnian Kilometric Radiation (SKR) sources positions and UV aurorae

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The Saturnian Kilometric Radiation (SKR) is the most intense kronian radio emission. It is an auroral emission supposedly associated with Saturn's polar aurorae, similar to the auroral kilometric radiation (AKR) at Earth. Here we investigate observations relating the SKR sources to ultraviolet (UV) aurorae.

The SKR, which dominates RPWS (Radio and Plasma Wave Science) dynamic spectra, is observed quasi-continuously by the Cassini spacecraft since 2003. In parallel, ultraviolet (UV) aurorae have been observed occasionally by the Hubble Space Telescope (HST). Here, we take advantage of a long HST campaign that took place in January 2007, providing 350 images spread over 13 days. Polar projection of the HST images allow us to directly derive the intensity, latitude and local time of UV aurorae.

Assuming that SKR is emitted via the Cyclotron Maser Instability, i.e. close to the local electron gyrofrequency, a goniometric (direction-finding) analysis of the data allows to measure the coordinates of the magnetic footprint of field lines carrying radio sources.

Preliminary results confirm the close association between SKR and discrete UV aurorae.