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2D-images of SKR radio sources by using Cassini/RPWS

1 A. Lecacheux

Observatoire de Paris, LESIA – CNRS UMR8109

The radio astronomy part of the RPWS instrument aboard Cassini is made of several wire antennas connected to digital spectral analyzers, providing information on direction, polarization and brightness distribution of the observed radio source. This capability is applied to the analysis of RPWS data obtained along the first orbits of Cassini, when the spacecraft distance to Saturn was less than 15 R_S, namely around the first four periapses to date (ranging at 1.4, 6.2, 4.8 and 4.8 R_S from Saturn, respectively). Taking into account the limitations of the method, we present a preliminary discussion of the following results, summarized and displayed as 2-D images over the sky plane of the reconstructed, average radio brightness distribution: i) radio sources are associated with both planetary poles, likely in regions magnetically connected to Northern and Southern auroral ovals, ii) the measured polarisation is 100% circular, compatible with a radiation on the X-mode, iii) the apparent brightness reaches largest values when the source is seen at the East or West (radio) limbs, iv) the observed brightness changes in magnitude and, maybe, in location, as a function of the planet rotation.