



Search for an eventual control of Saturnian kilometric radiation by Titan satellite

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The Cassini Radio and Plasma Wave Science Experiment (RPWS) revealed prominent arcs when the data are displayed in time-frequency coordinates, in the so-called dynamic spectra. We show that the Saturnian Kilometric Radiation (SKR) presents different kinds of characteristic appearances like arc structures. Those arcs may be classified in two sets: the ‘vertex early arcs’ (VEA) and the ‘vertex late arcs’ (VLA), and are observed in the frequency range between 80 kHz and 1 MHz. We investigate the probable control of the SKR arcs by the Titan satellite. We emphasize in this study on the arc observational parameters (e.g. the probability of occurrence, the local time and the gyro-frequency) and their eventual relations to the geometrical configuration between Saturn, Titan, and the observed (i.e. Cassini spacecraft). We follow in this analysis a similar method applied to the control of Jovian decametric emissions by the Io satellite. This method consists principally to observe, on one side, the arc curvatures and their corresponding maximum frequency, and on the other side the orbital phase of the Titan satellite around the planet. This leads us to provide a first attempt concerning the ‘controls’ of non-thermal Jovian and Saturnian radio emissions, respectively, by Io and Titan satellites.