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The discrimination between Jovian emission and SEDs

G. Fischer (1), M.D. Desch (2), P. Zarka (3), W. Macher (4), A. Lecacheux (3), D.A. Gurnett (1), W.S. Kurth (1), M.L. Kaiser (2), and H.O. Rucker (4)

(1) Dept. of Physics and Astronomy, Univ. of Iowa, Iowa City, USA, (2) NASA Goddard Space Flight Center, Greenbelt, USA, (3) Observatoire de Paris-Meudon, France, (4) Space Res. Institute, Austrian Acad. of Sciences, Graz, Austria

Short vertical streaks in the dynamic spectrum of the Cassini/RPWS (Radio and Plasma Wave Science) receiver in the frequency range of a few MHz can be due to Jovian emissions or SEDs (Saturn Electrostatic Discharges). Although Jupiter is increasingly far away from Cassini, the peaks of decametric Jovian arcs can still be detected a few dB above the galactic background, and in some cases they look very similar to the SEDs caused by lightning in Saturn's atmosphere. We show a method how to discriminate between these two phenomena by using the ratio of the measured autocorrelations in case the receiver uses at least two antennas in the so-called polarimeter mode. We analyze the special event from July 22, 2003, which was interpreted as the first indication of SEDs at a time when the spacecraft was still in a distance of 1.08 AU from Saturn. It can be shown that this event is most likely caused by emissions from Jupiter, hence SEDs a million times more powerful than lightning on Earth have not been detected.