



On the possible relations of non-Io DAM periodic bursts with Jovian VLF radio emission

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Abstract

Periodic radio bursts of Jovian non-Io DAM [1], which are observed in the decametric frequency range of dynamic spectra as a series of reoccurring arc-like radio bursts with an averaged period of 10.07 hours, exhibit also strong correlation with a significant enhancement of the solar wind ram pressure around Jupiter. In this study we investigate the possible relations between the occurrence of the non-Io DAM periodic bursts and VLF components of the Jovian radiation such as narrow-band kilometric (nKOM) and "bull-eye" radio emissions. The observations provided by Ulysses/URAP and Cassini/RPWS have shown that these VLF emissions are detected immediately after the passage of a solar wind pressure pulse, which crosses the Jovian magnetosphere every 13 or 26 days. This phenomenon can be explained by a strong interchange instability in the Io torus after strong solar wind pulses. We discuss the interchange instability, which can produce the VLF radio emission from the outer Io torus edge, as a possible mechanism of generation of the non-Io DAM periodic bursts.

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References

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