

Synchrotron emission modeling for the Jovian environment

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The atmospheric composition retrieval from Jupiter's radiation signature via Juno's MWR instrument, it is necessary to separate as robustly as possible the contributions from three emission sources: CMB, planet and synchrotron radiation belts. The numerical separation requires a refinement, based on the in-situ data, of a higher fidelity model for the synchrotron emission, namely the multi-parameter, multi-zonal model of Levin et al. (2001). This model employs an empirical electron energy distribution, which prior to the Juno mission, has been adjusted exclusively from VLA observations. The challenges and approaches taken to perform this task are discussed here. The model will be continuously improved with the availability of additional information, both from the MWR and magnetometer instruments.

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