

The Jovian synchrotron radiation belts from a local viewpoint: observations and modeling issues

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The Juno spacecraft, in its second year at Jupiter in polar orbit, continues to observe the Jovian system from close range and afar. Electrons originating in the solar wind are trapped and accelerated in the Jupiter's magnetosphere towards ultra-relativistic velocities, eventually releasing energy via synchrotron radiation. Jupiter's space environment, through the intense synchrotron radiation, provides both a challenge and an opportunity to uncover the electron distribution around the planet. The Jovian microwave radiation environment has been mapped so far for 11 orbits with the MWR experiment on Juno at 6 wavelengths from 2 cm to 50 cm with every spin of the spacecraft. The MWR Radiometer captures the synchrotron emissions along with Jupiter's thermal radiation, and the existing data, used to improve the atmospheric measurements, and to provide new constraints on current synchrotron emission models, is presented here cumulatively and compared with model predictions.