



## Observations from Juno's Radiation Monitoring Investigation during Juno's First Look at Jupiter's Inner Radiation Belts: Perijove 1

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Jupiter's inner radiation belts have not yet been fully explored. Our understanding of the relativistic electron population within this region is based on a limited set of in situ measurements made by the Galileo probe and Pioneer 10 and 11 spacecraft, and remote synchrotron emission measurements. Juno's unique polar orbit will enable data collection at high magnetic latitudes and to within 2,600 miles of Jupiter's cloud tops. Over the course of the mission Juno's trajectory will provide the most comprehensive tour of Jupiter's inner magnetosphere to date. To function within Jupiter's extremely harsh radiation environment Juno's star trackers and science instruments have been very heavily shielded to reduce noise from penetrating relativistic electrons. Differences in instrument shielding strategies created differing spectral sensitivities to penetrating electrons. The detectors of Juno's cameras register impacts by penetrating charged particles as elevated noise signals within a cluster of pixels local to each "hit." The objective of Juno's Radiation Monitoring Investigation is to learn more about Jupiter's >10-MeV electron environment by actively retrieving and counting the noise signatures from penetrating radiation in Juno's star cameras and science instruments. Radiation measurements from multiple instruments will be coordinated in campaigns within regions of the magnetosphere where little to no in situ high energy electron data exist from prior missions. Dedicated "radiation image" collection and particle counting by the spacecraft Stellar Reference Unit, the Magnetic Field Investigation Advanced Stellar Compass, and the JIRAM infrared imager is the investigation's primary data set. We will discuss observations of the radiation environment made by Juno's SRU and ASC star cameras and the JIRAM infrared imager during Juno's "first look" perijove pass through Jupiter's inner magnetosphere on August 27, 2016 (4,147 km from the cloud tops at closest approach).

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