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Observations from Juno's Radiation Monitoring Investigation during Juno's Early Orbits

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Juno's Radiation Monitoring (RM) Investigation profiles Jupiter's >10-MeV electron environment throughout unexplored regions of the Jovian magnetosphere. RM's measurement approach involves active retrieval of the characteristic noise signatures from penetrating radiation in images obtained by Juno's heavily shielded star cameras and science instruments. Collaborative observation campaigns of "radiation image" collection and penetrating particle counts are conducted at targeted opportunities within the magnetosphere during each of Juno's perijove passes using the spacecraft Stellar Reference Unit, the Magnetic Field Investigation's Advanced Stellar Compass Imagers, and the JIRAM infrared imager. Simultaneous observations gathered from these very different instruments provide comparative spectral information due to substantial differences in instrument shielding.

Juno's orbit provides a unique sampling of energetic particles within Jupiter's innermost radiation belts and polar regions. We present a survey of observations of the high energy radiation environment made by Juno's SRU and ASC star cameras and the JIRAM infrared imager during Juno's early perijove passes on August 27 and December 11, 2016; and February 2 and March 27, 2017.