

The energetic particle signatures of Saturn's G ring

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Since its arrival at Saturn, Cassini has crossed the region magnetically-connected to the planet's G ring - the ring's L-shell - on four occasions, and has grazed the region once. During each of these periods, the LEMMS sensor of Cassini's MIMI instrument detected a drop in energetic ion fluxes. This is caused by the continuous absorption of trapped magnetospheric radiation by the G ring's constituent particles. On day 248 of 2005, the instrument also detected a significant drop in energetic electron fluxes, signifying the probable presence of a localised region within the ring of very high particle density. These observations are an excellent complement to remote sensing observations of the G ring. We present our interpretation of these MIMI observations, comparing them with Voyager and Pioneer results, and discuss how the results contribute to our understanding of the G ring.