

The magnetospheres of Saturn and Jupiter as viewed by Cassini and Juno

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The magnetospheres of the gas giants Saturn and Jupiter are believed to be driven to varying degrees by external drivers, planetary rotation and internal plasma sources. Both planets are rapid rotators with active volcanic moons and complicated ring systems. Their auroras are key indicators to the magnetosphere-ionosphere coupling at the giant planets. At Saturn Planetary Period Oscillations (PPOs) are observed throughout the magnetosphere, including during Cassini's Grand Finale on field lines mapping to Saturn's rings. In this paper we will report on the latest results from the Cassini and Juno missions, including both the latest observations and theoretical modelling. We will elucidate on a series of studies determining properties of Saturn's PPOs throughout the Cassini mission, and compare our results with those derived from analysis of Saturn kilometric radiation emissions from the Voyager, Ulysses, and Cassini mission. We will further model the magnetosphere-ionosphere coupling current at Jupiter and compare these results with observations from the Juno spacecraft and HST observations. We will finish by detailing some of the outstanding questions in the field.

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