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Multi-instrument overview of the 1-hour pulsations in Saturn's magnetosphere — •BENJAMIN PALMAERTS^{1,2}, ELIAS ROUSSOS¹, AIKATERINI RADIOTI², NORBERT KRUPP¹, and DENIS GRODENT² — ¹Max-Planck-Institute für Sonnensystemforschung, Göttingen, Germany — ²Laboratoire de Physique Atmosphérique et Planétaire, Université de Liège, Liège, Belgium

The in-situ exploration of the magnetosphere of Saturn has revealed different periodic processes. Several studies have reported periodicities of about 1 hour in the charged particle fluxes, plasma wave, magnetic field and auroral emission brightness. We made a 10-year survey of the quasi-periodic (QP) 1-hour energetic electron injections observed in the Saturn's outer magnetosphere by the MIMI/LEMMS instrument on board Cassini. These injections appear as pulsations in the electron fluxes at energies between 100 keV up to several MeV. We investigated also the concomitant signatures of the electron pulsations in the radio emissions and the magnetic field measured by Cassini. The results of the multi-instrument study suggest a high-latitude source for the pulsed electrons. Observations of QP 1-hour brightening of a high-latitude auroral spot associated with the magnetospheric cusp support this scenario. Pulsed dayside magnetopause reconnection is a likely common triggering process for the cusp auroral brightening and the QP pulsations in the high-latitude electron fluxes. Finally, the presence of electron pulsations in the vicinity of the magnetopause is another indication of the involvement of magnetopause reconnection as a triggering process for the QP electron injections.

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