EPSC Abstracts
Vol. 6, EPSC-DPS2011-1361-1, 2011
EPSC-DPS Joint Meeting 2011
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# Evidence of time-variable electrons at Saturn: Quasi-periodic whistler mode emissions in the inner magnetosphere

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When Cassini passes through Saturn's inner magnetosphere, the Radio and Plasma Wave Science (RPWS) instrument occasionally observes a series of whistler mode emissions that each rise in frequency over a period of five to ten minutes and repeat every five to ten minutes. These waves are present in the RPWS data set from 2005 through the present date and are observed over a large range of planocentric distances and latitudes. These waves are strongly correlated with the rotating density asymmetry inside of ~5 $R_S$, but do not appear to be correlated with the spacecraft's position relative to Enceladus. We estimate that the source electrons would have energies greater than about 1 keV, much higher than the eV thermal electron temperature. Lastly, RPWS observes these waves between 5 and 10% of the time spent inside of ~5 $R_S$. We discuss possible sources of these azimuthally-asymmetric and time-variable electrons and consider consequences of their presence in inner-magnetospheric dynamics.