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Chorus Observations at Saturn

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Whistler mode chorus has been detected at Saturn by the Radio and Plasma Wave Science (RPWS) instrument in two different regions. The most common observations are of chorus propagating away from Saturn's magnetic equator, suggesting a source near the magnetic equator. This chorus is only detected below half the electron cyclotron frequency, occurs primarily from L shells of about 5 to 8, and shows no obvious correlation with Saturn latitude or local time. High resolution measurements with the RPWS wideband receiver shows that the fine structure of the chorus has longer time scales (tens of seconds to minutes) than detected at the Earth ($<$ 1 second). The second category of chorus detected at Saturn is in association with local plasma injections. For many of the plasma injection events, intense chorus emissions are detected both above and below half the electron cyclotron frequency, with a gap in the emission at half the cyclotron frequency. This chorus also shows fine structure, but at much smaller time scales ($<$ 1 second), and overall, the structure of the chorus appears very similar to chorus detected at the Earth. The similarities and differences of the two types of chorus detected at Saturn will be discussed and the relationship between the wave characteristics and the electron distributions will be explored.