

Particle dynamics at SLAMS observed at the Kronian bow shock

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In this work we investigate the upstream regions of the Kronian bow shock in the vicinity of quasi-parallel shock transitions, using the plasma measurements of the Cassini spacecraft now orbiting Saturn. We focus on the dynamical processes of particle beams at Short Large Amplitude Magnetic Structures (SLAMS) which have also been analysed in the upstream region of the Earth's bow shock in recent years. For our analysis we use the plasma data of the Ion Mass Spectrometer sensor of the Cassini Plasma Spectrometer (CAPS) and also the Magnetometer in order to identify the structures. So far no previous mention of SLAMS at Saturn is found in literature. We chose three intervals of SLAMS observations from the period of 2004-2005 for a more detailed analysis. We examined the directional and energy distributions of the particle beams, and at the structures we found signs of plasma thermalisation and beam deflection. Because the plasma gyroradius is larger at Saturn - compared to Earth - the characteristic length scales of the structures are larger too. We compared these scales and the observational properties of SLAMS at Saturn with the ones previously detected by the Cluster probes at Earth.