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## Low frequency waves in the foreshocks of Jupiter and Saturn: Cassini magnetometer observations

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We describe observations from the Cassini magnetometer investigation (MAG) upstream from the Kronian bow shock during the first orbits of its mission around Saturn. In particular, we analyze the properties of phase-steepened, non-linear, low frequency waves. During these events, the prolongation of the local mean magnetic field intersects the mean position of the bow shock suggesting that these waves are generated in the Kronian ion foreshock. We comment on the instabilities capable of generating these waves in their linear stage and we discuss the steepening process which takes place in the nonlinear stage of the wave growth. In addition, we comment on the type ion distribution function to which these waves are associated and we analyze the role of these waves in the formation of the quasi parallel shock. Finally, we compare these recent results with similar observations obtained by Cassini MAG during the flyby of Jupiter in 2000-2001.