



Structure of Langmuir wavepackets in the foreshock of Saturn

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The Langmuir waves observed in the foreshock of Saturn are typically strongly modulated and appear in the form of short wavepackets. We used data from the RPWS instrument of Cassini to investigate the modulation patterns, characteristic modulation scales and estimate growth and damping rates of the waves. The results are compared with the properties of Langmuir waves observed by CLUSTER in the foreshock of the Earth. A large number of these waveforms has a beat-type modulation similar to the waves observed in foreshocks of Earth and other planets. Such observations are usually interpreted either in terms of a nonlinear wave decay or as reflection of Langmuir waves on density inhomogeneities. While for most observed waveforms both interpretations seem possible, we show specific examples where the wave reflection is most likely the process responsible for the observed modulation pattern.