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The fine structure of ion-sound turbulence observed in the terrestrial bow shock transition layer

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High time resolution observations the quasiperpendicular regime of the terrestrial bow shock by Cluster are used to investigate ion sound turbulence in the ramp and foot regions. The four independent probe potential measurements onboard a single satellite are used to distinguish between ion-sound and whistler turbulence. The joint wavevector-frequency spectra are calculated and the waves propagation characteristics are determined. These wave characteristics are use to argue that at least some of observed wave packets have been generated by local currents in the foot region. The amplitude of the ion sound turbulence is used to assess the importance of ion sound based anomalous processes on the energy redistribution at the shock front.