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Discussions

Interactive comment on "Observational support for the electron mirror mode: AMPTE-IRM and Equator-S measurements in the magnetosheath" *by* Rudolf A. Treumann and Wolfgang Baumjohann

Anonymous Referee #2

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The paper shows observations of the mirror mode and electron mirror mode waves in the magnetosheath to support the previous theoretical study by Noreen et al 2017. The authors only showed the dynamic spectra or waveforms of the magnetic field, but my question is how did the authors identify the mirror, electron mirror and lion roars? Especially, for me, it is difficult to distinguish the two fluctuations in Figure 2. Since the pressure balance between the magnetic field and the ions are important for the mirror mode structures, the plot of the ion beta (and also electron beta for the electron mirror mode?) will be important. The authors explained in Lines 52-57, that the lion roars are in the whistler mode branch and mostly parallel propagation, but I cannot find the characteristic from the panels. Could the authors show more evidence for them?

In Figure 1, it looks the lion roars and another bursty spectra (electron mirror wave?) do not appear simultaneously. Do the authors have any comments on it? (From the difference of the energy source or other plasma conditions?) For a minor comment, please state the spec (sampling rate, dynamic range...) of the instruments that the authors used in the study.

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