



Mirror waves: dips, peaks and threshold

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Nonpropagating mirror-mode structures are commonly observed in many regions of natural plasma such as solar wind, planetary magnetosheaths, in cometary plasma, Io wake, terrestrial ring current and even on the outskirts of solar system. Mirror structures are typically observed in the form of either magnetic holes or peaks. Fast survey mode plasma data from the THEMIS satellites are used to solve the puzzle of why mirror structures in the form of dips are observed in the regions of mirror stable plasma and are carried away by a plasma flow huge distances from the region of generation. THEMIS data also show that for mirror structures whose spatial scales considerably exceed ion Larmor radius, the perpendicular temperature anticorrelates with the strength of the magnetic field. This apparent contradiction with the conservation of adiabatic invariants is explained by the role of trapped particles. Analysis of magnetic dips properties enables remote sensing of its generation region.