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Mirror instability as a special limit of slow alfvenon solutions in anisotropic plasmas

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Using Cluster measurements in the magnetosheath we demonstrate that magnetic pulsations, commonly regarded as "mirror modes", occur for both perpendicular, as well as for parallel pressure anisotropy. By using nonlinear two-fluid theory we show that space observations of magnetic pulsations are consistent with their interpretation as slow alfvenons, soliton-like structures that occur for both isotropic and anisotropic plasmas in a variety of plasma environments. We also show that plasma pressure anisotropy enlarges occurrence area of nonlinear waves, and that the well known mirror instability condition represents a small subset in a continuum of possible nonlinear solutions representing alfvenons.