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Whistler Wave Trapping by Magnetosonic Solitons[1] A. TENERANI, LPP France, F. CALIFANO, F. PEGORARO, Pisa University — In the presence of inhomogeneous external fields, such as a density hump or a hole, whistler waves can be trapped for times much longer than their characteristic time scale. In space plasmas, whistler waves have been detected in the magnetosheath and inside the magnetosphere in correspondence to density humps with magnetic field minima. These structures are known as "magnetic holes" and have been interpreted as mirror modes. However, a different possible explanation is to consider such magnetic holes as magnetosonic solitons. Based on this second interpretation and on the ducting properties of an inhomogeneous plasma, we present a numerical study of whistler waves trapped into slow magnetosonic solitons that propagate together for very long times. We conjecture that this mechanism could be responsible for the whistler waves observed in the magnetosphere in correspondence of large scale inhomogeneous structures.

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