Title: Suprathermal Ion Pressure in the Local Interstellar Medium

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Abstract

The first published results from IBEX and Cassini, and the earlier termination shock crossings by the Voyagers, are strongly suggestive of geometric relation of the local interstellar magnetic field to the outer boundary region of the heliosphere. The inferred pressure of the magnetic field is not, however, high enough to balance the heliosheath particle pressure computed from the IBEX and Cassini measurements. Since the interstellar ram pressure is also relatively low, and higher energy GeV cosmic ray ions are not trapped on the local interstellar field lines, the pressure balance at the heliopause is more likely dominated by suprathermal keV-MeV particles on both sides. This should not be surprising in view of the long history of early work by Parker and others on cosmic ray particle pressure in interstellar space but with the new insight that the dominant contribution may be at suprathermal keV-MeV energies. Supporting pressure calculations are reviewed for a model interstellar proton spectrum from earlier work of Cooper et al. (2003, 2006, 2008).

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