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From: merav opher <Merav.Opher@jpl.nasa.gov>

Organization: jpl

To: Merav Opher <Merav.Opher@jpl.nasa.gov>

The Prediction of a Formation of an Unstable Jet-Sheet at the Edge of the Solar System

Merav Opher, Paulett C. Liewer, Marco Velli (JPL/ Italy)
Tamas I. Gombosi, Ward Manchester, Darren L. DeZeeuw, Igor Sokolov,
and Gabor Toth(U of M and Hungary)

We predict that at the boundary between the solar system and the interstellar medium an unstable jet-sheet forms. Due to Kelvin-Helmholtz type instability, the jet is unstable (and oscillates up and down). We used a state-of-art 3D MHD code art with an adaptive grid mesh especially designed to refine the region at the current sheet and in the region between the termination shock and the heliopause.

We present results from three different resolutions (ranging from 0.5AU to 6AU at the current sheet) and discuss the effect of resolution on the characteristics of the jet such as strength and width. We show that in order to resolve the jet, there is a need of a resolution higher than 3-4AU, the resolution used in previous studies.

At the present study we assume as a first approximation that the solar magnetic field and rotation are aligned. We include in the model magnetic field effects in the interaction between the solar and interstellar winds. Very few previous studies included the solar magnetic field and had poor resolution. We discuss the effect of neutrals in this instability. And and the prediction of the intensity of same effect in other solar like stars with different winds and magnetic field intensities.

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Merav Opher, Caltech Postdoctoral Scholar
Jet Propulsion Laboratory, Pasadena, CA
Phone: (818) 393-3251 Fax: (818) 354-8895
<http://butch.engin.umich.edu/~merav>