



BV technique accuracy: comparison with other single spacecraft techniques

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The BV technique (Dorville et al. 2014) allows getting an accurate determination of the magnetopause normal direction, using a combination of magnetic measurements and the ion velocity measurement at the crossing. This tool is a new one that is added within the existing available set of single spacecraft techniques. We compare here its accuracy with several other ones, by using both synthetic models of rotational or tangential discontinuities and Cluster data. In both cases, we add different arbitrary noises to the given parameter profiles and run the different normal determination methods. Each method gives a different cloud of points, all these clouds having different mean values and different dispersions. We show that, in almost all cases, the BV dispersion is one of the smallest, with the MVABC and mass flux one. From the artificial data, we show furthermore that the BV mean value is generally better than the MVABC one, whenever the normal magnetic component B_n is not extremely small. Similarly, the BV mean value is better than the one deriving from mass conservation whenever the variation of the normal boundary speed is not extremely small.

Dorville et al., BV technique for investigating 1-D interfaces, submitted to J. Geophys. Res., 2014