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Ion observations at Mercury's Magnetospheric Cusp

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The magnetospheric cusp is a region of direct entry for solar wind mass, energy and momentum into a planetary magnetosphere. Dayside magnetic reconnection between the interplanetary magnetic field and the planetary field allows shocked solar wind plasma to flow down open magnetospheric field lines. Whilst this is occurring these magnetic field lines convect poleward. For a spacecraft travelling through the high latitudes, this causes a velocity filter effect to be observed in the ion data, whereby higher energy ions are observed at lower latitudes. Here we present the ion observations from the MESSENGER spacecraft at Mercury's cusp, specifically focusing on ions latitudinally dispersed in energy. From these dispersions, the distance to the reconnection site is calculated and used to better understand the process of reconnection at Mercury's dayside magnetopause.