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First Plasma Ion Measurements in the Mercury Magnetosphere and Space Environment

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The MESSENGER mission to Mercury offers the first opportunity for measurements of low-energy ions in Mercury's magnetosphere and its immediate space environment. We present observations of the Fast Imaging Plasma Spectrometer (FIPS), which is part of the Energetic Particle and Plasma Spectrometer (EPPS) instrument. These first observations will characterize Mercury's heliospheric environment, its magnetosphere, and, potentially, pick-up ion components originating from surface sputtering and atmospheric processes. We put these observations in the context of predictions of Mercury's exosphere based on magneto-hydrodynamic (MHD) and other models.