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First Chang'E-2 results of the lunar plasma environment: Observation of a plasma void near the Serenitatis antipode?

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We present the first and preliminary results on the near-Moon plasma environment, based on the spectrogram data obtained with the Solar Wind Ion Detector (SWID) onboard Chang'E-2 from 10 lunar orbits on 10-11 Oct 2010. These orbits, at a constant altitude of $\sim$100 km, approach gradually the well-known Lunar Magnetic Anomaly (LMA), the Serenitatis antipode. The data reveal unambiguously a region with decrement in proton density and flow speed, as well as enhancement in temperature. The near coincidence of this region with the Serenitatis antipode strongly suggests the presence of a mini-magnetosphere associated with the LMA, which effectively deflects, decelerates and heats the incident Solar Wind (SW) protons.