



The Shifting Paradigm of the Martian Magnetosphere: MAVEN Observations

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The Martian magnetosphere forms as the solar wind interacts with the planet's upper atmosphere. This interaction is complicated by the presence of localized crustal magnetic fields, with the largest sources located in the southern hemisphere. We investigate the Martian magnetosphere by analyzing comprehensive particle and field data provided by NASA's Mars Atmospheric Volatile Evolution (MAVEN) spacecraft, which went into orbit about Mars on 21 September 2014. The Martian space environment is typically categorized as an induced magnetosphere, similar to that of Venus; however, as MAVEN continues to collect

valuable data, we identify characteristics in the Martian magnetosphere that are similar to intrinsic magnetospheres. Focusing on the magnetotail of Mars, we present evidence of these features including: 1) Magnetic reconnection in the cross-tail current sheet; 2) Flux rope formation; 3) Current sheet flapping; and 4) Evidence that the magnetotail is comprised of both draped interplanetary magnetic field and open planetary fields. These MAVEN observations confirm that the Martian magnetotail has a hybrid configuration between an intrinsic and induced magnetosphere, shifting the paradigm of Mars as we have understood it thus far.

4:00pm in CAS 502. Refreshments served at 3:45pm in CAS 500.

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