



## **Martian ionospheric plasma densities: First results from MAVEN/LPW of the near-terminator ionosphere in the Northern hemisphere of Mars**

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MAVEN began its science mission at Mars in November 2014. Since then, it has been making measurements with a suite of plasma instrumentation, among which is the Langmuir Probe and Waves (LPW) instrument package. LPW consists of two probes mounted on 7m booms which can be operated as independent Langmuir probes, or jointly as an electric field sensor. LPW can accurately measure the thermal electron plasma density and temperature encountered by the spacecraft during periapsis by performing current-voltage sweeps. Alternatively, the instrument can be operated in 'waves' mode, yielding electric field spectra spanning frequencies in the Hz - MHz range. Additionally, an active sounding mode is available, whereby a low power white-noise signal is fed to the plasma to stimulate the generation of waves at the local plasma frequency. Through these measurement techniques, electron densities accurate to within  $\sim 5\%$  can be derived, along with the electron temperature. The instrument cadence and typical spacecraft velocities translate to measurements of the plasma on length scales  $< 20$  km. MAVEN's periapsis altitude of  $\sim 180$  km (dropping lower during "deep dip" campaigns) allow it to conduct in-situ measurements of the ionosphere at altitudes that remain poorly understood. We will present initial results from analysis of the first few months of data taken by LPW, concentrating in particular on plasma density structures observed in the near-terminator ionosphere in the northern hemisphere of Mars.