

Abstract Submitted
for the GEC14 Meeting of
The American Physical Society

Kinetic Modeling of Martian Atmosphere Aerobraking Plasma

DERETH DRAKE, EVAN SMITHWICK, Valdosta State University — During Martian atmospheric aerobraking the plasma that forms around a spacecraft can be considered a high-volume plasma reactor that is sustained by the dissipation of the spacecraft's kinetic energy. At altitudes below 100 km, it has been shown that the plasma parameters vary considerably depending on the spacecraft's trajectory. However, in the range which is applicable to aerobraking, $100 \text{ km} < h < 200 \text{ km}$, little of this work has been completed. We have evaluated a simple kinetic model to determine a probable range of plasma parameters for altitudes between 100 and 200 km using existing Martian atmospheric data and available probe trajectories.

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Date submitted: 11 Jun 2014

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