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Gas Kinetic Model for Titan Atmospheric Entry Plasma JAEL STANTON, NYA LAMPKIN, DERETH DRAKE, Valdosta State University — The Huygens mission to Titan showed us a great deal of interesting things about the atmosphere of Titan. During the atmospheric entry phase for the lander, most of the kinetic energy of the probe was lost in the form of thermal ionization of the atmosphere, i.e. a plasma is formed around the probe during entry. One interesting idea for replenishing the battery power for any probe landing on Titan is to use a magnetohydrodynamic (MHD) generator to extract energy from the plasma that forms during the entry phase. In this presentation we will describe the chemical composition, density, and pressures of the atmosphere at different altitudes. We will then show a basic gas kinetic model to determine how the composition changes during the thermal ionization process, which is important for determining the amount of energy produced by an MHD generator.

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