



## Preliminary Model for the Solar Wind Interaction with Pluto's Extended Plasma Tail

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We are developing a hybrid model of the Pluto plasma environment (HYB-Pluto) to study the solar wind interaction with Pluto's plasma tail to distances of 1000 Pluto radii ( $R_P$ ) while still resolving the shock and/or wave features upstream of Pluto with good resolution. The HYB-Pluto model features an extended domain and adaptable grid structure along with important processes such as ion-neutral interactions. We present results from our first simulations with the HYB-Pluto model that used realistic values for the solar wind bulk properties and included  $\text{He}^{++}$  ions. The results show the formation of a bow shock upstream of Pluto as well as asymmetries of ion density and bow shock in the direction of the convection electric field. This model, along with other current models [1], will provide tools to interpret and understand the plasma observations obtained during expected encounter of the New Horizons spacecraft with the Pluto system in July 2015.

[1] P.A. Delamere, Hybrid Code Simulations of the Solar Wind Interaction with Pluto, *J. Geophys. Res.*, 114, A03220, doi:10.1029/2008JA013756, 2009.