Abstract Submitted
for the TSS09 Meeting of
The American Physical Society

Ion Characteristics in Jupiter's Magnetotail from New Horizon data DEBRUP HUI, YI-JIUN SU, UT Arlington, HEATHER ELLIOTT, DAVE MCCOMAS, Southwest Research Institute, San Antonio, FRAN BAGENAL, UC Boulder, FRANK CRARY, Southwest Research Institute, San Antonio — Jupiter's gigantic magnetotail, extending 2500 Jovian radii, is the largest cohesive structure in our solar system. For the first time, NASA's New Horizons (NH) satellite in 2007 traversed almost axially. Data from its onboard SWAP instrument (Solar Wind Around Pluto), which makes coincidence measurements of the ions shows many periodic structures and existence of light and heavy ion species with varying densities in Jupiter's magnetotail plasma population. A better understanding of the physical processes governing such diversity requires knowing the characteristics of the various charged particles present, such as the ion density, velocity, temperature, and pressure. We have developed a 3-dimensional phase-space distribution model by constructing the observed signatures along with the calibration parameters provided by the SWAP team during the NH magnetotail flyby. The model uses five input parameters from SWAP. A 3-D isotropic Maxwellian distribution function is used to estimate density, velocity, and temperature, which is then converted into counts as the instrument measures the count rates. Finally, minimizing the chi-square fitting of our model results in the maximum likelihood of the various parameters. We will show our results from 500-800 RJ.

Robert Bruntz
UT Arlington

Date submitted: 28 Feb 2009 Electronic form version 1.4