Abstract Submitted
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Modeling Plasma Interactions with Satellite-Borne Instrumentation[1] JEFFREY KLENZING, GREGORY EARLE, RODERICK HEELIS, The University of Texas at Dallas — We have developed a simulation of ion interactions with the biased grids of the Retarding Potential Analyzer (RPA), which is one of the fundamental instruments of space science. RPAs have successfully been flown on spacecraft since the late 1950's, including Sputnik III, the Viking lander, and the DMSP family of satellites. The RPA measures the distribution of particle flux as a function of ion energy by using biased grids as an energy filter for collected particles. In order to fit collected data to physical parameters, the interaction of charged particles with the biased grid must be studied thoroughly. We have simulated this interaction using ANSYS, a multiphysics software tool. Perturbations to the Whipple RPA equation due to non-uniform potential will be discussed with the intent of developing quantitative corrections to inferred parameters, such as velocity and temperature.

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