



Simulated response of top-hat electrostatic analysers – importance of phase-space resolution

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We use a numerical code able to reproduce the angular/energy response of a typical electrostatic analyzer of top-hat type starting from velocity distribution functions (VDFs) generated by numerical imulations. The simulations are based on the Hybrid Vlasov-Maxwell (HVM) numerical algorithm which integrates the Vlasov equation for the ion distribution function in multi-dimensional geometry in phase space, while the electrons are treated as a fluid. Virtual satellites launched through the simulation box measure the particle VDFs. Such VDFs are interpolated into a spacecraft reference frame and moved from the simulation Cartesian grid to energy-angular coordinates to mimic the response of a real electrostatic sensor in the solar wind and in the magnetosheath for different conditions. We discuss the results of this study with respect to the importance of phase-space resolution for a space plasma experiment meant to investigate kinetic plasma regime.