Energy Partition at Collisionless Shocks in Plasmas With Super-Thermal Pickup Ion Populations VADIM ROYTERSHTEYN, Space Science Institute, MICHAEL GEDALIN, Ben Gurion University of the Negev, NIKOLAI POGORELOV, University of Alabama in Huntsville — Collisionless shocks are ubiquitous in many space physics, astrophysics, and laboratory settings. One of the basic unsolved theoretical issues is quantitative prediction of the downstream plasma state for given upstream parameters. This problem becomes even more significant in situation where super-thermal population of ions are present upstream from the shock, as is the case for many shocks encountered in heliosphere, e.g. the termination shock. In this contribution, we discuss the problem, present overview of the previous investigations, and introduce recent advancements obtained with the aid of a semi-analytical theoretical model, which is compared against results of fully kinetic particle-in-cell simulations.

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