Changing ion distribution functions at the solar wind passage over the termination shock

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The well known Rankine-Hugoniot relations for an MHD shock represent a system of conservation laws in terms of the lowest moments of the distribution functions,taken as shifted Maxwellians. Already permitting anisotropic Maxwellians then, however, leads to shock relations which are not closable anymore and only allow for a parametrisation by the downstream temperature anisotropy. In fact, to close the system a kinetic description by means of a Boltzmann-Vlasow equation is required. Here we develop an appropriate form for the governing Boltzmann equation taking into account the change of the magnetic field and the plasma bulk velocity in the transition region between upstream and downstream flow regions. As we show one can then find all the higher moments of the downstream ion distribtuion function and thereby close the system of MHD shock relations.