



Entropy production at the multi-fluid MHD solar wind termination shock

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In recent years it has become evident that the solar wind termination shock needs to be explained by a multi-fluid MHD phenomenon. To describe the entangled complexity of thermodynamic and dynamic interactions of several different fluids one has to start from a consistent multi-species MHD shock description. We treat the passage of three separate fluids over the shock, namely solar wind protons, pick-up protons and electrons. Associated with the different downstream fluid pressures we then calculate different fluid entropies that are produced at the shock passage. We do show that the most relevant contribution to the total particle entropy is connected with the electron pressure which actually by far dominates the downstream plasma dynamics.