

Solar wind electron temperature evolution and electron heat flux

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In the solar wind at the orbit of the Earth, the electron heat flux is often found below the values given by the Spitzer-Harm theory of collision dominated plasma. Wave/particle interaction and lack of collisions are thought to be responsible for the observed small electron heat flux. We model the slow and fast solar wind streams using gyrotropic high moment equations in an attempt to have a better understanding of the electron heat flux and electron temperature evolution. The solar wind in various parameter regime are modelled so a realistic comparison between modelled electron heat flux and in situ measurements is possible. Our results suggest that the small electron heat flux in the solar wind can be described by gyrotropic high moment equations in a plasma with weak collisions. Results of this model effort will be presented.