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Evolution of the solar wind electron distribution function downstream of the termination shock

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We theoretically describe the evolution of the solar wind electron distribution function downstream of the termination shock under the effect of shock-induced injection of KeV-energetic overshoot electrons. We start from a kinetic phase-space transport equation in the bulk frame of the heliosheath plasma flow that takes into account convective processes, cooling processes and whistler-wave-induced energy diffusion. From this kinetic equation we then proceed to an associated pressure moment equation and arrive at a so-called pressure transport equation describing the evolution of the electron pressure in the co-moving rest frame. Assuming that the local electron distribution can be represented as a local kappa function with a kappa parameter that varies with the streamline coordinate s, we obtain an ordinary differential equation for kappa as function of s. With this result we gain the the heliosheath electron distribution function along the plasma streamlines downstream from the termination shock. These results we then compare with electron flux data obtained with the VOYAGER-2 electron detector.