Adiabatic description of long range frequency sweeping[1] BORIS
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developed to describe long range frequency sweeping events in the 1D electrostatic
bump-on-tail model with fast particle sources and collisions. The model includes
three collision operators (Krook, drag (dynamical friction) and velocity space dif-
fusion), and allows for a general shape of the fast particle distribution function.
The behavior of phase space holes and clumps is analyzed, and the effect of particle
trapping due to separatrix expansion is discussed. With a fast particle distribution
function whose slope decays above the resonant phase velocity, hooked frequency
sweeping is found for holes in the presence of drag collisions alone.

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