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Hot electrons between cold walls[1] DMITRII KIRAMOV, BORIS BREIZMAN, University of Texas at Austin — We consider electron cooling in a collisionless plasma slab between two cold and freely emitting walls. Numerical calculations suggest a counterintuitive behavior of this system: the cooling rate slows down and eventually stops, leaving the system with a significant fraction of its initial thermal energy. Analytical treatment within the Vlasov-Poisson model reveals a set of steady-states with a two-component distribution of electrons: the primary electrons trapped within the potential wells and the secondary electrons forming the counter-streaming beams. We show that such steady-states are linearly stable with respect to one-dimensional perturbations. Establishment of a particular steady-state depends on initial conditions.

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