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On the 1D dissipative Boltzmann equation: self similar profile cooling rate

We consider a one dimensional dissipative Boltzmann equation (Regularity and equilibration of reaction-diffusion systems with nonlinear diffusion or variable hard-spheres kernel) and consider the optimal decay rate of the kinetic energy as well as the existence of a non-trivial self-similar profile (homogeneous cooling state). Our method is based on compactness tools in the set of Borel measures.