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Asymptotic behavior of dissipative system with different constant end states

In this talk we give some results on the global existence and the asymptotic behavior of solutions to the Cauchy problem for coupled initial data converging to constant states at infinity. The basic idea is to propose a linear convection-diffusion wave as the decay profile so as to approximate the limiting behavior as x approaches infinity. The resulting nonlinear system then converges to the linear profile under certain smallness condition of the initial data and perturbation of the original system. We thus show that the evolution equations may be viewed as the composition of a linear diffusion wave and of a parabolic system which converges even faster.