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Propagation of transport barriers in a simple model of coupled heat and particle fluxes[1] MIKHAIL MALKOV, PATRICK DIAMOND, University of California San Diego — Understanding of L → H transitions is a critical problem in magnetic confinement studies. Strong nonlinearity and coupling of particle and heat fluxes result in solution multiplicity, the L-H mode coexistence. Stationary L → H transitions studied in detail earlier reveal the pedestal width to be strictly coupled to the fueling profile in the case of neglected curvature of the pressure profile. Finite pressure curvature, however, shifts emphasis to the heating rate. To better understand the mechanism of L → H transitions, particularly factors that determine the pedestal width, we study time evolution of the temperature and density profiles and the L-H interface propagation. Both the inward and outward propagation can occur. It is shown that the heat production in the core region and the fueling at the edge determine the speed and direction of interface propagation. The front propagation solutions describe the penetration of the H-mode state into L-mode state and vice versa. The impact of these findings on the problem of hysteresis of stationary solutions is discussed.

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