Experimental observations of the avalanche-like electron heat transport events and their dynamical interaction with the shear flow structure

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Non-diffusive avalanche-like transport events are observed in the L-mode and the weak ITB core plasmas in KSTAR when magnetohydrodynamic instabilities are absent. This observation implies that the avalanche-like event are a prevalent and universal process in the electron heat transport of tokamak plasmas. In addition, the electron temperature profile corrugation, which indicates the existence of the E×B shear flow layers, is clearly demonstrated. The measured width of the corrugation is around $45\rho_i$. The avalanche activity is limited by this mesoscale shear flow structure, and the long range (macroscale) avalanche-like event occurs after the flow structure is destroyed.