

[P28] Comparative study on two distinct types of jamming transition in packet traffic on scale-free networks

Kanghun Kim, Seoul National University

We investigate two different kinds of jamming transition in packet traffic with three different routing protocols on scale-free networks. With extensive numerical simulations, we find that an abrupt jamming transition occurs only if when a large number of nodes breaks down and the traps are formed at the jamming transition point. We also find that the global congestions do not always coincide with an abrupt jamming transition. We find that transport efficiency achieves its maximum at the jamming transition point for the transition with global congestions, while it does not for one with local congestions. The nature of jamming transitions in packet traffic depends on governing protocols, whether they cause the cascading of congestions and the formation of traps in the system.