

A COOPERATIVE CONTROL APPROACH FOR QUEUE STABILIZATION IN COMMUNICATION NETWORKS

SABATO MANFREDI

ABSTRACT. This paper is concerned with the analysis, design and validation of a congestion cooperative rate control for communication networks. A sufficient condition for network stability in presence of multiple bottleneck and heterogeneous sources with different time delay is given and it is used for controller parameter design. The stability condition and the resulting cooperative control performance in terms of fairness, link utilization, packet loss and fault tolerance are validated firstly by Matlab/simulink tool and then by discrete packet simulator.

Keywords: control of communication networks, Traffic Engineering, pinning congestion control, consensus protocols, network planning, resilience, business continuity.