Transport Equations for Internet Transmission Control

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Abstract
The talk focuses a class of stochastic models for analyzing the fluctuations of the throughput obtained by TCP controlled flows. The throughput has an evolution which is captured by stochastic differential equations and a distribution which is captured by non local transport equations. The stationary distribution can then be obtained in closed form from these transport equations using Mellin transform techniques.

This leads to new qualitative results on a variety of TCP variants, network topologies, loss scenarios (such as droptail or active queue management) and flow structures.

Biography
François Baccelli's is INRIA Directeur de Recherche in the Computer Science Department of Ecole Normale Superieure in Paris, where he started the research group on the theory of communication networks in 1999 and a member of the French Academy of Sciences.

His current research interests are in the theory of stochastic networks and the modeling and performance evaluation of computer and communication systems, on the analysis of IP networks and the development of new tools for the modeling of protocols with spatial components in wireless networks. He coauthored research monographs on point processes (with P. Bremaud in 1987), the max plus algebra (with G. Cohen, G.J. Olsder and J.P. Quadrat in 1992), queueing theory (with P. Bremaud in 2003) and stochastic geometry for wireless networks (with B. Blaszczyszyn in 2009).

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