Convergence to equilibrium of stochastic semigroups and an application to buffered networks flows

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The long-time behaviour of flows on finite metric graphs is known to depend heavily on the network topology. Depending on this topology, the lengths of the edges and the flow velocities, the flow might converge or behave asymptotically periodic as $t \to \infty$.

In this talk we show that the situation changes if we introduce a mass buffer in at least one of the vertices. Such a buffer has a smoothing effect on the flow and thus enforces convergence as $t \to \infty$. As we consider finite graphs only, one would even expect that the convergence is uniform (i.e., with respect to the operator norm over the L^1-space over the graph). In order to prove that this is indeed true we employ a novel characterisation of operator norm convergence to equilibrium for stochastic C_0-semigroups.