



Invitation to Seminar Talk

Poincaré and logarithmic Sobolev constants for metastable Markov chains

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Host: Jan Maas

Metastable dynamics is characterized by the existence of at least two time scales on which the system shows different behavior. On the short time-scale, the system will reach some local equilibrium which is confined to some strict subset of the state space. Convergence to the equilibrium of the systems happens on the longest time scales which is characterized by rare transitions between these metastable states.

In the context of reversible stochastic dynamics, the potential theoretic approach to metastability has proven to be a powerful tool to derive sharp estimates for quantities characterizing the metastable behaviour. In this talk, I will focus on the metastable behaviour of reversible Markov chains. In particular, I will discuss an approach to derive optimal constants in the Poincaré and logarithmic Sobolev inequality.

The two main ingredients are good local Poincaré and logarithmic Sobolev constants on subsets of the state space and sharp control of the mean difference between metastable regions. The first is obtained by translating a capacitary inequality of Vladimir Maz'ya to discrete state space leading to estimates valid beyond the metastable setting. The mean-difference is estimated by a variational characterization of weighted negative Sobolev-norms. Combining these results leads to the final estimates.

Joint work mit Martin Slowik (TU Berlin)

Tuesday, May 12, 2015, 3:00pm

Seminar room Mondi 2, Central Building, 1st floor



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