
SHIROU WANG, University of Alberta

(De)synchronization for Markov random networks arising from Markov perturbations

A physical network is naturally subject to noise influences from both external (extrinsic) and internal (intrinsic) sources. The extrinsic noises are usually environmentally related, while the intrinsic ones are typically due to internal uncertainties. A discrete-time, discrete-state (dtds) network with only extrinsic noises is commonly modeled by a discrete random dynamical system (RDS), but the one with only intrinsic noises is often modeled by a Markov chain. In this talk, we will consider a dtds network with both extrinsic and intrinsic noises under the framework of the so-called Markov random network (MRN). In particular, we will discuss the phenomenon and mechanism of (de)synchronizations for MRNs which arise as Markov-perturbations of a synchronized discrete RDS. Characterization of (de)synchronizations will be given from the view points of both probability distributions and dynamical systems.