

# COLLOQUIUM

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## Consistency of community detection and probability models in networks

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10:20 a.m. - 11:10 a.m.  
Refreshments: 10:00 a.m.

### Abstract

Analysis of networks and in particular discovering communities in networks has been a focus of recent work in several fields, with diverse applications including social networks, food webs, and internet security. Nonetheless, there is a certain amount of disconnect between the many algorithms proposed for community detection, the probability models for random graphs that are simple enough to be tractable, and the complex features we observe in real networks. The talk discusses a number of methods and models for community detection, including a new model that allows for more flexible network structures. A general asymptotic framework under this new model is derived, which allows us to evaluate and compare many community detection methods in terms of consistency. Various algorithms for fitting the models and empirical results on a number of artificial and real networks will also be discussed.

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