



## Channing Network Science Seminar

July 13th (Friday), 2018, 11am @ 5th-floor conference room



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### Resilience of networks with community structure behaves as if under an external field

Abstract: Much work has focused on phase transitions in complex networks in which the system transitions from a resilient to a failed state. Furthermore, many of these networks have a community structure, whose effects on resilience have not yet been fully understood. Here, we show that the community structure can significantly affect the resilience of the system in that it removes the phase transition present in a single module, and the network remains resilient at this transition. In particular, we show that the effect of increasing interconnections is analogous to increasing external magnetic field in spin systems. Our findings provide insight into the resilience of many modular complex systems and clarify the important effects that community structure has on network resilience.

BIO: Gaogao Dong (董高高) is an Associate Professor and deputy director of Applied Systems Analysis Institute of Jiangsu University. He completed his PhD after two years joint Ph.D. training of Jiangsu University and Boston University. Now, he is visiting the Center of Polymer Studies of Physics department of Boston University. His research focuses on the resilience of complex network, theory and complex network theory and application.

Hosted by Yang-Yu Liu