

q Index Degree Distribution in Random Networks via Superstatistics

Thursday, 21 November 2024 09:30 (20 minutes)

In this study, we employ a superstatistical approach to construct q exponential and q Maxwell Boltzmann complex networks, generalizing the concept of scale-free networks. By adjusting the crossover parameter λ , we control the degree of the q exponential plateau at low node degrees, allowing a smooth transition to pure power-law degree distributions. Similarly, the parameter b modulates the q Maxwell Boltzmann curvature, facilitating a shift toward pure power-law networks. This framework introduces a novel perspective for constructing and analyzing scale-free networks. Our results show that these additional degrees of freedom significantly enhance the flexibility of both network types in terms of topological and transport properties, including clustering coefficients, small-world characteristics, and resilience to attacks. Future research will focus on exploring the dynamic properties of these networks, offering promising directions for further investigation.

Primary authors: 邓, 为炳 (华中师范大学); 王, 慧林 (华中师范大学)

Presenter: 王, 慧林 (华中师范大学)

Session Classification: Thursday Morning First Session