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APS March Meeting 2024  
Monday–Friday, March 4–8, 2024; Minneapolis & Virtual

**Session G28: Statistical Physics of Networks: Theory and Applications to Complex Systems II**  
11:30 AM–2:18 PM, Tuesday, March 5, 2024  
Room: 101I

Sponsoring Units: GSNP DSOFD DBIO  
Chair: Fabrizio De Vico Fallani, Inria Paris Brain Institute

**Abstract: G28.00006 : Swift Consensus Formation on Scale-Free Networks\***  
12:54 PM–1:06 PM

← Abstract →

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The spreading and evolution of opinions, ideas, and beliefs are crucial in grasping the complexities of social influence, information diffusion, and collective decision-making dynamics. We examine the processes that underlie opinion formation, transition, and consensus-building by investigating the short-time dynamics of the majority-vote evolution on scale-free networks. We employ short-time Monte Carlo simulations to examine the rapid consensus shift, measured using an order parameter from an almost entirely disordered state. Our analysis reveals the presence of a measurable initial critical slip regime during which consensus increases quickly to the stationary state. We show that the network density and size influence consensus evolution. This critical slip phenomenon opens up fascinating possibilities for application in decentralized consensus systems, such as consensus acceleration, suppression, and freezing.

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