

Product of random stochastic matrices and distributed averaging

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Abstrak

The thesis deals with averaging dynamics in a multiagent networked system, which is a main mechanism for diffusing the information over such networks. It arises in a wide range of applications in engineered physical networks (such as mobile communication and sensor networks), as well as social and economic networks. The thesis provides in depth study of stability and other phenomena characterizing the limiting behavior of both deterministic and random averaging dynamics. By developing new concepts, and using the tools from dynamic system theory and non-negative matrix theory, several novel fundamental results are rigorously developed. These contribute significantly to our understanding of averaging dynamics as well as to non-negative random matrix theory.