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Title:	Spatiotemporal regularity in networks with stochastically varying links
Authors:	Kumar, Ankit (/jspui/browse?type=author&value=Kumar%2C+Ankit) Agrawal, V. (/jspui/browse?type=author&value=Agrawal%2C+V.) Sinha, Sudeshna (/jspui/browse?type=author&value=Sinha%2C+Sudeshna)
Keywords:	Statistical and Nonlinear Physics
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Abstract:	In this work we investigate time varying networks with complex dynamics at the nodes. We consider two scenarios of network change in an interval of time: first, we have the case where each link can change with probability p_t , i.e. the network changes occur locally and independently at each node. Secondly we consider the case where the entire connectivity matrix changes with probability p_t , i.e. the change is global. We show that network changes, occurring both locally and globally, yield an enhanced range of synchronization. When the connections are changed slowly (i.e. p_t is low) the nodes display nearly synchronized intervals interrupted by intermittent unsynchronized chaotic bursts. However when the connections are switched quickly (i.e. p_t is large), the intermittent behavior quickly settles down to a steady synchronized state. Furthermore we find that the mean time taken to reach synchronization from generic random initial states is significantly reduced when the underlying links change more rapidly. We also analyse the probabilistic dynamics of the system with changing connectivity and the stable synchronized range thus obtained is in broad agreement with those observed numerically.
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