Title:	Synchronization in time-varying networks
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Abstract:	We study the stability of the synchronized state in time-varying complex networks using the concept of basin stability, which is a nonlocal and nonlinear measure of stability that can be easily applied to high-dimensional systems [P. J. Menck, J. Heitzig, N. Marwan, and J. Kurths, Nature Phys. 9, 89 (2013)1745-247310.1038/nphys2516]. The time-varying character is included by stochastically rewiring each link with the average frequency f. We find that the time taken to reach synchronization is lowered and the stability range of the synchronized state increases considerably in dynamic networks. Further we uncover that small-world networks are much more sensitive to link changes than random ones, with the time-varying character of the network having a significant effect at much lower rewiring frequencies. At very high rewiring frequencies, random networks perform better than small-world networks and the synchronized state is stable over a much wider window of coupling strengths. Lastly we show that the stability range of the synchronized state may be quite different for small and large perturbations, and so the linear stability analysis and the basin stability criterion provide complementary indicators of stability.
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