

Phase transition in non-linear random networks

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We discuss the complex dynamics of a non-linear random networks model, as a function of the connectivity k between the elements of the network. We show that this class of networks exhibit an order-chaos phase transition for a critical connectivity $k = 2$. Also, we show that both, pairwise correlation and complexity measures are maximized in dynamically critical networks. These results are in good agreement with the previously reported studies on random Boolean networks and random threshold networks, and show once again that critical networks provide an optimal coordination of diverse behavior.

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