

The natural connectivity of colored random graphs

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ABSTRACT.

The natural connectivity as a robustness measure of complex network has been proposed recently. It can be regarded as the average eigenvalue obtained from the graph spectrum. In this paper, we introduce an inhomogeneous random graph model, $G(n, \{c_i\}, \{p_i\})$, and investigate its natural connectivity. Binomial random graph $G\left(n, \sum_{k=1}^m c_k^2 p_k\right)$ is a tight approximation for $G(n, \{c_i\}, \{p_i\})$. Simulations are performed to validate our theoretical results.

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