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**Coevolution model of multiplex networks** JIN-HYEON KIM, JUNG YEOL KIM, K.-I. GOH, Korea University — Many real-world complex systems can be represented as multiplex networks with multiple types of links. Each link type in the system defines network layers, which coexist and cooperate for the system's function. To understand such multiplex systems, we study a modeling framework based on coevolution of network layers. In our previous research, we introduced the coevolution of network layers as an evolutionary mechanism for the correlated multiplexity in growing networks [1]. We examined how the entangled growth of coevolving layers can shape the network structure and showed analytically and numerically that the coevolution can induce strong degree correlations across layers, as well as modulate degree distribution. In this research, we study several variants of the basic model with more realistic features such as the difference in the number of nodes and non-simultaneous arrivals of nodes in different layers, to characterize how these features also affect the correlation property of the multiplex structure. Further, we study the effect of negative coupling between layers in multiplex network evolution.

[1] J. Y. Kim and K. -I. Goh, Phys. Rev. Lett. 111, 058702 (2013)

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