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*Coevolutionary Graphs: Models, Dynamics, and Approximations.*

Coevolutionary graphs are simple, mechanistic models in which node states and graph topology are intertwined. The rich space of possible dynamics includes opinion-updates, epidemic containment, and evolutionary games. Despite their simplicity, this class of models tends to exhibit a rich class of behaviors. These include disconnected homogeneous subgraphs – reminiscent of the formation of “echo-chambers” or geographically isolated speciation – as well as persistent, interacting heterogeneity. These regimes are usually separated by a critical point, whose calculation has been a topic of intense study over the last fifteen years. We will give a brief survey of this class of literature and discuss some new results for several variants of an opinion-based model. (Received January 27, 2020)