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Cascades in the Threshold Model for varying system sizes[1] PANAGIOTIS KARAMPOURNIOTIS, SAMEET SREENIVASAN, BOLESLAW SZYMANSKI, GYORGY KORNISS, Rensselaer Polytechnic Institute — A classical model in opinion dynamics is the Threshold Model (TM) aiming to model the spread of a new opinion based on the social drive of peer pressure. Under the TM a node adopts a new opinion only when the fraction of its first neighbors possessing that opinion exceeds a pre-assigned threshold. Cascades in the TM depend on multiple parameters, such as the number and selection strategy of the initially active nodes (initiators), and the threshold distribution of the nodes. For a uniform threshold in the network there is a critical fraction of initiators for which a transition from small to large cascades occurs, which for ER graphs is largerly independent of the system size [2]. Here, we study the spread contribution of each newly assigned initiator under the TM for different initiator selection strategies for synthetic graphs of various sizes. We observe that for ER graphs when large cascades occur, the spread contribution of the added initiator on the transition point is independent of the system size, while the contribution of the rest of the initiators converges to zero at infinite system size. This property is used for the identification of large transitions for various threshold distributions.

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[2]Singh P et al. 2013 Sci. Rep. 3 2330

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