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Effect of citation patterns on network structure SOMA SANYAL, School of Library and Information Science, Indiana University — We propose a model for an evolving citation network that incorporates the citation pattern followed in a particular discipline. We define the citation pattern in a discipline by three factors. The average number of references per article, the probability of citing an article based on it's age and the number of citations it already has. We also consider the average number of articles published per year in the discipline. We propose that the probability of citing an article based on it's age can be modeled by a *lifetime distribution*. The lifetime distribution models the citation lifetime of an average article in a particular discipline. We find that the citation lifetime distribution in a particular discipline predicts the topological structure of the citation network in that discipline. We show that the power law exponent depends on the three factors that define the citation pattern. Finally we fit the data from the Physical Review D journal to obtain the citation pattern and calculate the total degree distribution for the citation network.

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