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**Identification of core-periphery structure in networks** XIAO ZHANG, TRAVIS MARTIN, MARK NEWMAN, Univ of Michigan - Ann Arbor — Many networks can be decomposed into a dense core plus an outlying, loosely-connected periphery. In this talk I will describe a method for performing such a decomposition on empirical network data using methods of statistical inference. Our method fits a generative model of core-periphery structure to observed data using a combination of an expectation-maximization algorithm for calculating the parameters of the model and a belief propagation algorithm for calculating the decomposition itself. We find the method to be efficient, scaling easily to networks with a million or more nodes and we test it on a range of networks, including real-world examples as well as computer-generated benchmarks.

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