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Consistency of maximumlikelihood and variational estimators in the Stochastic Block Model

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The stochastic block model (SBM) is a probabilistic model de- signed to describe heterogeneous directed and undirected graphs. In this paper, we address the asymptotic inference on SBM by use of maximum- likelihood and variational approaches. The identi ability of SBM is proved, while asymptotic properties of maximum-likelihood and variational esti- mators are provided. In particular, the consistency of these estimators is settled, which is, to the best of our knowledge, the rst result of this type for variational estimators with random graphs.

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