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Change-point estimation in high-dimensional Markov Random Field models

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In this talk we discuss a change-point estimation problem in the context of high-dimensional Markov Random Field models. Change-points represent a key feature in many dynamically evolving network structures. The change-point estimate is obtained by maximizing a profile penalized pseudolikelihood function under a sparsity assumption. We also derive a tight bound for the estimate, up to a logarithmic factor, even in settings where the number of possible edges in the network far exceeds the sample size. The performance of the proposed estimator is evaluated on synthetic data sets and is also used to explore voting patterns in the US Senate in the 1979–2012 period.

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