

Is Belief Propagation a Spectral algorithm?

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Belief Propagation is a probabilistic inference algorithm. Some of the more fascinating applications of the algorithms seem to follow alchemy tradition: the input to the algorithm are random probabilities that have nothing to do with the underlying problem, while the output probabilities are very informative. In the talk I will discuss how spectral ideas have been helpful in dispelling this mystery and how as a result of this analysis, we were able to devise better spectral algorithms. Based on joint works with Amin Coja Oghlan and with Krzakala, Moore, Neeman, Sly, Zdeborova and Zhang.