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# Correlation Decay in Games and Optimization

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I will discuss optimization problems on graphs with random edge weights, focusing on minimum weight matching and the traveling salesman. Non-rigorous method of statistical physics have been known since the 1980's to give precise results about these problems. Loosely speaking, the predictions are based on correlation decay, what happens at one place in the graph does not too much influence what happens at another place.

I will present an approach to making some of these results rigorous, based on introducing a two-person game. The crucial property of this game is that a player who can see $k$ moves ahead can make the correct move with high probability for large $k$.