



Mathematics and CS Seminar

Exponential decay of correlations for $O(N)$ spin systems for arbitrary N

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The Spin $O(N)$ model is a classical statistical mechanics model whose configurations are collections of unit vectors taking values on the surface of a $N - 1$ dimensional unit sphere. Some special cases are the Ising model ($N = 1$), the XY model ($N = 2$), and the classical Heisenberg model ($N = 3$). Despite the fact that it is a very classical model, there remain important gaps in understanding, particularly in the case $N > 2$. This talk will present a new recent result about exponential decay of correlations for arbitrary (non-zero) values of the external magnetic field and arbitrary spin dimension $N > 1$, extending previous results which hold only for $N = 1, 2, 3$. Our proof is probabilistic and employs a representation of the model as a system of coloured random paths which is of independent interest. The talk is based on a joint work with B. Lees.

Tuesday, January 26, 2021 04:30pm - 05:15pm
online via Zoom



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