The Kac–Ward approach to the Ising model

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Resumo/Abstract:
The Kac-Ward approach to the planar Ising model yields the partition function of the model in terms of the determinant of a certain operator. In this talk I will shortly present the history of this method and its recent developments. I will then concentrate on connections with the discrete holomorphic approach of Smirnov et al. In particular I will show how one can represent the solution to a certain discrete Riemann-Hilbert boundary value problem in terms of a complex weighted random walk. This representation is similar to the classical representation of the solution to the discrete Dirichlet boundary value problem for harmonic functions in terms of the standard random walk.