Probability Seminar

Title: The Ising Model and Cluster expansion

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Date: 04/27/2018
Time: 2:15pm
Place: Room MAT-A(Miniauditorium)

Abstract: The Ising model permits us to study properties of a physical system such as magnetization and phase transition using micro properties of its components. This is possible by using a probabilistic approach.

For the study of the phase transition, it is very useful to know the properties of some expected values (correlation functions) or of covariations (truncated correlation functions). For that, we can represent them using cluster expansion which is a series expansion.

We will also present an application of cluster expansion to obtain exponentially decay of the covariation, at low-temperature, and with zero external fields.

References

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[P13] A. Procacci. Cluster Expansion Methods in Rigorous Statistical Mechanics. Unpublished Manuscript, 2014.

[P99] A. Procacci. The tree graph identity and the polymer expansion. World Scientific Publisher, 103-110, 1999.

[FP07] R. Fernandez, A. Procacci. Cluster Expansion for Abstract Polymer Models New bounds from an old approach. Communications in Mathematical Physics. 274, n.1, 123-140, 2007.