
BERN-FRIBOURG GRADUATE SEMINAR

a seminar for Master and PhD students

Thursday 31st March, 2022: 17:15 - 18:00

Room 2.52, Perolles 08, Fribourg

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An overview of the behavior of correlations in the Ising model

Abstract

The Ising model, introduced by Lenz in 1920, is one of the most simple and most well-known models of statistical physics. From a physical perspective, it is a very important object, since it provides the first rigorous explanation of the paramagnetism phenomenon. On the other hand, the model studied from a rigorous mathematical perspective is a very rich object and is the source of a vast number of problems and conjectures, some of them very difficult (the proof of one of the main problems in the domain - namely the conformal invariance of the two-dimensional Ising model in the square lattice - by Stanislav Smirnov in 2006, was rewarded by a Fields Medal in 2010).

In this talk, I will introduce the model and discuss the existence of a phase transition, following an argument of R. Peierls (1936). If times allows it, I will also introduce the problem of the study of the correlations of the model and introduce the main results in the domain.