# Bern-Fribourg Graduate Seminar

a seminar for Master and PhD students

Thursday 12th March, 2026: 16:15 - 17:00

Room B5, Exakte Wissenschaften, Bern

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# Magnets are analytic

**Abstract**

When a magnet is heated to a very high temperature, it loses its magnetisation. The lowest temperature at which this occurs is called the Curie temperature of the magnet. This is one of the simplest examples of a phase transition in statistical mechanics, that is, a transition of a material from one state (magnetised) to another (non-magnetised). One way to model how magnets are affected by temperature is through the so-called Ising model.

In this talk, we will observe how the Curie temperature appears in the Ising model. Moreover, we will also see that there is no other phase transition in this model. More precisely, we will see that the magnetisation of the Ising model is an analytic function of the temperature everywhere except, possibly, at the Curie temperature. In terms of magnets, this means that the only temperature around which the magnetic strength of a magnet may change abruptly is the Curie temperature. This last part is based on a joint work with Lucas D'Alimonte.

There is no prerequisite to the talk except having already played with magnets.