Contribution ID: **12** Type: **not specified**

Probability distribution function of the 2d Ising order parameter

Monday 23 September 2024 15:30 (20 minutes)

The question of the probability distribution of the sum of random variables has suscited considerable attention from various fields of physics and mathematics. While the case of uncorrelated variables is described by the central limit theorem and its extensions, that of strongly correlated variables is more complicated. Turning our attention to the canonical example of strongly correlated variables, Ising spins close to criticality, we discuss the rate function that describes the statistics of their sum, the field theoretical formalism that allows us to compute it and present results obtained from the nonpertrubative functional renormalization group. In particular, while in 3d a simple local potential approximation is enough to reproduce the rate function, in 2d, owing to the stronger correlations at the fixed point, it is necessary to go beyond. We show that taking into account the momentum dependence of the correlation functions is crucial to correctly reproduce the rate function, which we account for by means of the celebrated Blaizot-Mendez–Galain-Wschebor approximation.

Presenter: ROSE, Félix

Session Classification: Parallel B