Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

Thursday, 29 January 2026, 16:30
Lipschitz-Saal (LWK 1.016)

Aleksandra Korzhenkova

EPF Lausanne

Vector-valued Gaussian free field conditioned to avoid a ball: Entropic repulsion of the norm and Freezing of spins

Motivated by understanding the behavior of spin O(N) models at low temperature, we study the law of the two-dimensional vector-valued Gaussian free field conditioned to avoid a ball at every site of a subdomain. We prove that, under this conditioning, the norm of the massless field exhibits entropic repulsion, while its angular components (spins) freeze at all mesoscopic scales. A key step in the analysis is to show that, around any given point in the bulk of the range, the unconditioned field has no holes. In this talk, I will assume this result and sketch how it leads to the entropic repulsion and spin-freezing behavior of the conditioned field. *Joint work with A. Sepúlveda*