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Ornstein—Zernike theory for the near-critical planar random cluster model

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In this talk, we will discuss the classical Ornstein-Zernike theory for the random-cluster models (also known as FK percolation). In its modern form, it is a very robust theory, which most celebrated output is the computation of the asymptotically polynomial corrections to the pure exponential decay of the two-points correlation function of the random-cluster model in the subcritical regime. We will present an ongoing project that extends this theory to the near-critical regime of the two-dimensional random-cluster model, thus providing a precise understanding of the Ornstein-Zernike asymptotics when p approaches the critical parameter p_c. The output of this work is a formula encompassing both the critical behaviour of the system when looked at a scale negligible with respect to its correlation length, and its subcritical behaviour when looked at a scale way larger than its correlation length. Based on a joint work with Ioan Manolescu.

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