

Brezin, E.; Parisi, G.; Ricci-Tersenghi, F.

The crossover region between long-range and short-range interactions for the critical exponents. (English) [Zbl 1318.82017](#)

J. Stat. Phys. 157, No. 4-5, 855-868 (2014).

It is well known that systems with an interaction decaying as a power of the distance may have critical exponents that are different from those of short-range systems. There is a value of the exponent that separates the short-range behavior from the long-range behavior. The following natural question is interesting: What happens at this crossover point? In this paper, the authors propose a general form for the crossover function. Namely, they find that there is a non-trivial behavior at the crossover point, i.e., one has logarithmic correlations to the standard power law behavior. They compare the obtained predictions with the results of numerical simulations for two-dimensional long-range percolation.

Reviewer: [Farruh Mukhamedov \(Kuantan\)](#)

MSC:

[82B27](#) Critical phenomena in equilibrium statistical mechanics

[82B43](#) Percolation

[82D40](#) Statistical mechanics of magnetic materials

[05C83](#) Graph minors

Cited in **1** Review
Cited in **9** Documents

Keywords:

critical phenomena; percolation with long-range interactions; cross-over to short-range

Full Text: [DOI](#)

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