# The order of the phase transition in planar FK-percolation

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**Abstract:**
We study FK-percolation on $\mathbb{Z}^2$, a statistical mechanics model which depends on two parameters $p$ and $q$. For fixed $q$, it exhibits a phase transition in $p$ at a critical parameter $p_c(q)$. A long-standing conjecture, based on physicists' predictions, states that the phase transition should be of second order for $q$ lower than or equal to 4, and of first order for $q$ larger than 4. We prove the first part of the conjecture based on recent advances in the domain: namely, the computation of the critical value by V. Beffara and H. Duminil-Copin, and the study of Smirnov's parafermionic observable by H. Duminil-Copin. This talk is based on a joint work with H. Duminil-Copin and V. Sidoravicius.