Percolation transition in Josephson-junction arrays

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The percolation transition, dominated by the correlation length which is characterized by $\xi = \xi(p)$ in the vicinity of percolation threshold p_c, is investigated in the Josephson-junction arrays. Using the similar modeling strategy as in Refs. [1, 2], we measure the current-voltage (IV) characteristics close to p_c by resistivity-shunted-junction dynamics. We find that the transition belongs to the true superconducting transition. Further, we analyze the IV curves by two scaling schemes, which provide clear evidence to the critical behavior of the percolation-driven superconducting transition in the Josephson-junction arrays [3].

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