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Magnetism of weakly hole-doped, anisotropic CuO_2 spin chains in $La_5Ca_9Cu_{24}O_{41}$ R. LEIDL, Physics Department, Simon Fraser University, Burnaby, BC, Canada V5A 1S6, R. KLINGELER, B. BÜCHNER, Institute for Solid State Research at IFW Dresden, 01171 Dresden, Germany, M. HOLTSCHNEIDER, W. SELKE, Institut f. Theoretische Physik, RWTH Aachen, 52156 Aachen, Germany — Experiments suggest that for fields $B > 4$T (applied along the easy axis) the spin chain system in $La_xCa_{14-x}Cu_{24}O_{41}$, $x \geq 5$, is characterized by short-range spin order and quasistatic (quenched) charge disorder. Using realistic estimates for the interaction parameters, we present extensive Monte-Carlo simulations of a (classical) two-dimensional Heisenberg model with randomly distributed, static holes. We find, in particular, that the spin-flop transition of the pure model (without holes) is destroyed and transformed into a smooth anomaly. A qualitative agreement with the experimentally observed magnetic susceptibility curves in $La_5Ca_9Cu_{24}O_{41}$ is obtained.

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