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Finite-Temperature Phase Diagram of the $d = 3$ tJ Model with Quenched Disorder A. NIHAT BERKER, Koç University, MICHAEL HINCZEWSKI, Feza Gursey Research Institute — We study a quenched disordered $d = 3$ tJ Hamiltonian with static vacancies as a model of nonmagnetic impurities in high-T_c materials.[1,2] Using a position-space renormalization-group approach, we calculate the evolution of the finite-temperature phase diagram with impurity concentration p, and find several features with close experimental parallels: away from half-filling we see the rapid destruction of a spin-singlet liquid phase (analogous to the superconducting phase in cuprates) which is eliminated for $p \geq 0.05$; in the same region for these dilute impurity concentrations we observe an enhancement of antiferromagnetism. The antiferromagnetic phase near half-filling is robust against impurity addition, and disappears only for $p \geq 0.40$.
[1] M. Hinczewski and A.N. Berker, Eur. Phys. J. B **51**, 461 (2006).
[2] M. Hinczewski and A.N. Berker, arXiv:cond-mat/0607171v1 [cond-mat.str-el].

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