SUPERCONDUCTIVITY IN DISORDERED SYSTEMS

G. Litak[a], T. Paiva[b], R.T. Scalettar[c], C. Huscroft[d], R.R dos Santos[b]
[a]Technical University of Lublin, Nadbystrzycka 36, PL–20-618 Lublin, Poland
[b]Instituto de Fisica, Universidade Federal dos Rio de Janeiro,
Cx.P. 68 528, 21945-970 Rio de Janeiro RJ, Brazil
[c]Physics Department, University of California, Davis, CA 95616
[d]Hewlett-Packard Company, 8000 Foothills Boulevard, Roseville, CA 95747

9.7 cm

We study the effect of non-magnetic impurities on superconductivity in the negative U Hubbard model on a two dimensional square lattice. Two kinds of disorder are discussed and their influences on superconductivity are compared. The first kind of disorder deals with random site energy ϵ_i. The second one is connected with random interaction U_i, which can be $-|U|$ and 0 with probability c and $1-c$ depending on the lattice site i. Using the quantum Monte Carlo approach we find the critical concentration of impurity sites which destroys superconductivity.

13.4 cm

Subject category :

5. Phase Transitions and Critical Phenomena

Presentation mode :
oral

Corresponding author :
G. Litak

Address for correspondence :
Technical University of Lublin, Nadbystrzycka 36,
PL–20-618 Lublin, Poland

Email address :
litak@archimedes.pol.lublin.pl