

PAIRING FLUCTUATIONS IN HIGH TEMPERATURE SUPERCONDUCTORS

*H. Beck, Ph. Curty, A. Sewer, N. Andrenacci,
S. Sharapov*

Institut de Physique, Université de Neuchâtel
(2000 Neuchâtel, Switzerland;
e-mail: *Hans.Beck@unine.ch*)

S u m m a r y

Short coherence length superconductors show anomalous behaviour in various thermodynamic and transport properties above their critical temperature T_c . We interpret these observations in the framework of the attractive Hubbard model by considering the interaction between unpaired electrons and virtual pairs. Between T_c and T_ϕ , correlations among the phases of the pairs lead to an XY -type contribution to the specific heat C_V , to strong diamagnetic fluctuations, and to a well-developed pseudogap. Between T_ϕ and T^* , the pairing amplitude is visible in the spin susceptibility, in a broad hump in C_V , and in a pseudogap which fills up. We also study the internal structure of these preformed pairs.