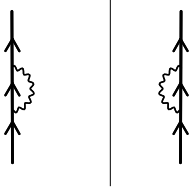
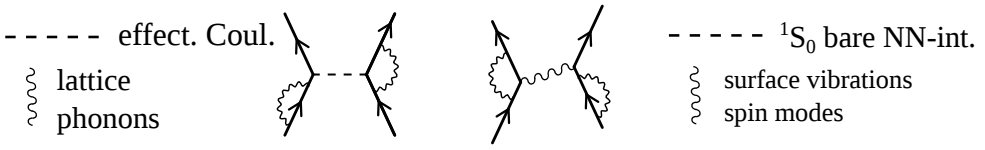
Metals | Nuclei



dressed

electrons (m=0.5 MeV) | nucleons (m=10^3 MeV)



spontaneous breaking of gauge symmetry

$$\left(U'_\nu + V'_\nu e^{-2i\phi} a^\dagger_\nu a^\dagger_{\bar{\nu}}\right)|0\rangle$$

independent pair motion

$\xi\,(\xi/d)$

10^4 Å(10^4) | 20 fm (5)

overlapping pairs 10^6 | number of pairs 8

$\Delta(\Delta/\epsilon_F)$

$\approx$ 1 meV (10^{-4}) | $\approx$ 1 MeV (10^{-2})

generalized quantality parameter

$$q_\xi = \frac{\hbar^2}{2m\xi^2}\frac{1}{\Delta}$$

10^{-5} | 10^{-2}

probing of gauge deformation

observation of currents between two weakly coupled superconductors (barrier) allows essentially for single tunneling, with 2e carriers (Josephson effect)

Single Cooper pair tunneling mainly as successive transfer between member of a piring rotational band fulfilling

$$\frac{\sigma(gs(N) \to gs(N+2))}{\sum_{exc}\sigma(gs(N) \to 0^+_{exc}(N+2))} \gg 1$$

$$N = N_0, N_0+2, N_0+4 \ldots N_0+14 \ldots (N_0 = 10)$$

P_2=P_1