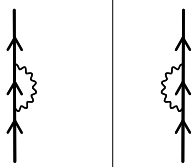


Metals

Nuclei

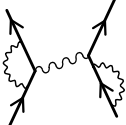
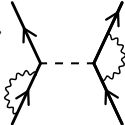


dressed

electrons (m=0.5 MeV)

nucleons (m=10³ MeV)

----- effect. Coul.
~~~~~ lattice  
~~~~~ phonons



----- ¹S₀ bare NN-int.
~~~~~ surface vibrations  
~~~~~ spin modes

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

$\xi (\xi/d)$

10⁴ Å(10⁴)

14 fm (7)

overlapping
pairs

number of
pairs

10⁶

6

$\Delta(\Delta/\epsilon_F)$

≈ 1 meV (10⁻⁴)

≈ 1.2 MeV (10⁻²)

generalized quantality
parameter

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

10⁻⁸

10⁻²

probing of gauge deformation
through the observation of

supercurrents of 2e carriers
(Josephson effect)

sub barrier two neutron
tunneling

between two weakly coupled

superconductors

superfluid nuclei

separated by

a barrier

a distance of closest approach

of value

$d \approx 1 - 3 \text{ nm}$

$d \lesssim \xi (\approx 14 \text{ fm})$

fulfilling

$$P_2 \approx P_1$$