

Superconductivity B

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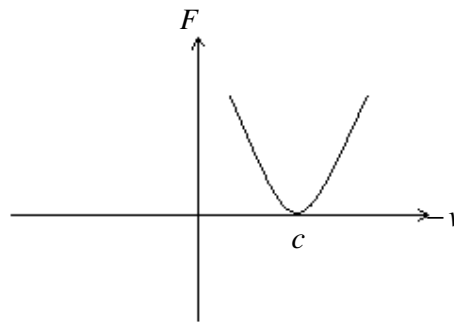
In superconductors, the lattice behaves as a black hole for electrons. So the force between electrons and between electrons and the lattice becomes zero.

A group of two electrons behave as a non-interacting neutral particle.

$$F = \frac{kh(c^2 - v^2)^2 f_0^4}{c^3(w_0 + v)^4} = 0 \quad \Leftrightarrow \quad v = -c$$

$$\frac{Gm}{x} = c^2 \quad \Leftrightarrow \quad \frac{m}{x} = \frac{c^2}{G} = 4.6 \times 10^{-16}$$

$$G = 1.95 \times 10^{32} \quad \text{-- Gravitational "constant"}$$



$$G = \frac{kw^4}{hc} \quad w = i2.1 \times 10^{10}$$

$$f = \frac{w}{\sqrt{k}} \quad m = \frac{hcf}{w^3} \quad m = i3.2 \times 10^{-29}$$

For Zn -- $m_z = 1.1 \times 10^{-25}$

One Zn particle and two electrons:

$$m_x = \sqrt{m_e \sqrt{m_e m_z}} = 1.7 \times 10^{-29} \quad m = 2m_x$$