the general science journal

Normal Temperature Superconductor

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Abstract – The "Unified Absolute Relativity Theory" paper at http://wbabin.net/saraiva/saraiva34.pdf, giving the general formula for forces, allows an attractive force between electrons, and the particular characteristics of the surrounding medium can explain Cooper-pair formation.

Force between the Cooper-pair electrons

According UART: $$F = \frac{kh(c^2 - v^2)^2 f_0^{\ 4}}{c^2(c^2 + vw_0)(w_0 + v)^3}$$

If v is imaginary: $v = iV$ ⇔

$$\Leftrightarrow \quad F = \frac{kh(c^2 + V^2)^2 f_0^{\ 4}}{c^2(c^4 + V^2 w_0^{\ 2})(w_0^{\ 2} + V^2)^3}\left[\left(w_0^{\ 3}c^2 - 3c^2V^2w_0 + V^4w_0 - 3V^2w_0^{\ 3}\right) + \right.$$

$$\left. + i\left(3V^3w_0^{\ 2} - Vw_0^{\ 4} - 3c^2Vw_0^{\ 2} + V^3c^2\right)\right]$$

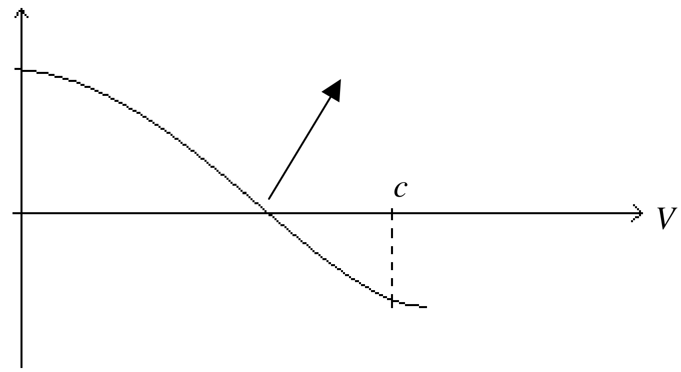
For a real attractive force:

$$w_0^{\ 3}c^2 - 3c^2V^2w_0 + V^4w_0 - 3V^2w_0^{\ 3} \le 0$$

Graphic of the real force

F_{ee}

$$V = \frac{c}{\sqrt{3 + \sqrt{8}}}$$



Gravitational potential

$$V^2 = \frac{2Gm_0}{x_0} \qquad \text{and} \qquad F = -G\frac{m_0^{\ 2}}{x_0^{\ 2}} \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad V^2 = \frac{-2Fx_0}{m_0}$$

At the superconducting phase the particles of the material behaves like black-holes for electrons.

$$c^2 = \frac{2x_0 kh(c^2 + c^2)^2 f_0^{\ 4}}{m_0 c^2 (c^4 + c^2 w_0^{\ 2})(w_0^{\ 2} + c^2)^3}(w_0^{\ 3}c^2 - 3c^4 w_0 + c^4 w_0 - 3c^2 w_0^{\ 3})$$

With $\quad V \approx c \quad$ and $\quad w_0 \approx c \quad \Leftrightarrow$

$$\Leftrightarrow \qquad \frac{m_0}{x_0} = \frac{2khf_0^{\ 4}}{c^5} \qquad \Leftrightarrow \qquad \frac{m_0}{x_0} = \frac{2h}{kc}$$

$$\underline{\frac{m}{x} = 6.46955302 \times 10^{-16}}$$

This is the formula for a room temperature superconductor. *m* is the mass of the composed particle and *x* is half of the distance between the particles; the lattice spacing.

Table of the m and x of the elements

H 1.67 -27 1.99																	He 6.64 -27 2.59
Li 1.15 -26 2.16	Be 1.50 -26 1.56											B 1.79 -26 1.52	C 1.99 -26 1.60	N 2.33 -26 2.05	O 2.66 -26 2.24	F 3.15 -26 2.17	Ne 3.35 -26 2.38
Na 3.81 -26 2.93	Mg 4.04 -26 2.45											Al 4.48 -26 2.21	Si 4.66 -26 2.36	P 5.14 -26 2.63	S 5.32 -26 2.57	Cl 5.88 -26 2.93	Ar 6.63 -26 3.15
K 6.49 -26 4.12	Ca 6.65 -26 3.42	Sc 7.46 -26 2.86	Ti 7.95 -26 2.56	V 8.46 -26 2.35	Cr 8.63 -26 2.26	Mn 9.12 -26 2.29	Fe 9.27 -26 2.30	Co 9.78 -26 2.20	Ni 9.74 -26 2.14	Cu 1.05 -25 2.20	Zn 1.09 -25 2.38	Ga 1.16 -25 2.61	Ge 1.21 -25 2.73	As 1.24 -25 2.68	Se 1.31 -25 2.92	Br 1.33 -25 3.40	Kr 1.39 -25 3.67
Rb 1.42 -25 4.94	Sr 1.45 -25 4.19	Y 1.48 -25 3.52	Zr 1.51 -25 3.14	Nb 1.54 -25 2.90	Mo 1.59 -25 2.75	Tc 1.64 -25 2.66	Ru 1.68 -25 2.66	Rh 1.71 -25 2.65	Pd 1.77 -25 2.62	Ag 1.79 -25 2.77	Cd 1.87 -25 3.00	In 1.91 -25 3.20	Sn 1.97 -25 3.24	Sb 2.02 -25 3.37	Te 2.12 -25 3.50	I 2.11 -25 3.80	Xe 2.18 -25 4.53
Cs 2.21 -25 5.92	Ba 2.28 -25 4.89	Lu 2.91 -25 4.42	Hf 2.96 -25 3.46	Ta 3.00 -25 3.23	W 3.05 -25 3.06	Re 3.09 -25 3.02	Os 3.16 -25 2.98	Ir 3.19 -25 3.01	Pt 3.24 -25 2.95	Au 3.27 -25 3.07	Hg 3.33 -25 3.46	Tl 3.39 -25 3.66	Pb 3.44 -25 3.74	Bi 3.47 -25 3.96	Po 3.47 -25 4.06	At	Rn

Example: Hydrogen $m = 1.67 \times 10^{-27}$; $x = 1.99 \times 10^{-10}$

Calculation of x:

Density $$\rho = \frac{m}{\frac{4}{3}\pi x^3} \quad \Leftrightarrow \quad x = \sqrt[3]{\frac{3m}{4\pi\rho}}$$

Table of the superconductivity factor *m/x*

H 8.39 -18																	He 2.56 -17
Li 5.32 -17	Be 9.62 -17											B 1.18 -16	C 1.24 -16	N 1.14 -16	O 1.19 -16	F 1.45 -16	Ne 1.41 -16
Na 1.30 -16	Mg 1.65 -16											Al 2.03 -16	Si 1.97 -16	P 1.95 -16	S 2.07 -16	Cl 2.01 -16	Ar 2.10 -16
K 1.58 -16	Ca 1.94 -16	Sc 2.61 -16	Ti 3.11 -16	V 3.60 -16	Cr 3.82 -16	Mn 3.98 -16	Fe 4.03 -16	Co 4.45 -16	Ni 4.55 -16	Cu 4.77 -16	Zn 4.58 -16	Ga 4.44 -16	Ge 4.43 -16	As 4.63 -16	Se 4.49 -16	Br 3.91 -16	Kr 3.79 -16
Rb 2.87 -16	Sr 3.46 -16	Y 4.20 -16	Zr 4.81 -16	Nb 5.31 -16	Mo 5.78 -16	Tc 6.17 -16	Ru 6.32 -16	Rh 6.45 -16	Pd 6.76 -16	Ag 6.46 -16	Cd 6.23 -16	In 5.97 -16	Sn 6.08 -16	Sb 5.99 -16	Te 6.06 -16	I 5.55 -16	Xe 4.81 -16
Cs 3.73 -16	Ba 4.66 -16	Lu 6.58 -16	Hf 8.55 -16	Ta 9.29 -16	W 9.97 -16	Re 1.02 -15	Os 1.06 -15	Ir 1.06 -15	Pt 1.10 -15	Au 1.07 -15	Hg 9.62 -16	Tl 9.26 -16	Pb 9.20 -16	Bi 8.76 -16	Po 8.55 -16	At	Rn

Sum of two wavelengths

When two frequencies interact:

$$f = f_1 + f_2 \quad \text{or, and} \quad f = f_1 - f_2 \quad \text{as} \quad f = \frac{c}{x}$$

$$\frac{1}{x} = \frac{1}{x_1} + \frac{1}{x_2} \quad \text{or, and} \quad \frac{1}{x} = \frac{1}{x_1} - \frac{1}{x_2}$$

Sum of two masses: $m = m_1 + m_2$

A room temperature superconductor with two elements

$$\frac{m}{x} = 6.47 \times 10^{-16} \quad ; \quad m = m_1 + nm_2 \quad ; \quad \frac{1}{x} = \frac{1}{n+1}\left(\frac{1}{x_1} + \frac{n}{x_2}\right)$$

The formula for the wavelength has been tested for several compounds and seems to be correct.

Superconductor CuAln

$$\begin{cases} \dfrac{1}{x} = \dfrac{1}{n+1}\left(\dfrac{1}{x_1} + \dfrac{n}{x_2}\right) \\ m = m_1 + nm_2 \\ \dfrac{m}{x} = 6.47\times10^{-16} = a_0 \end{cases} \quad \Leftrightarrow$$

$$\Leftrightarrow \qquad \underset{a}{n^2 m_2 x_1} + n\underset{b}{(m_1x_1 + m_2x_2 - a_0x_1x_2)} + \underset{c}{m_1x_2 - a_0x_1x_2} = 0$$

$$n = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

C_U -- $m_1 = 1.05\times10^{-25}$; $x_1 = 2.2\times10^{-10}$

Al -- $m_2 = 4.48\times10^{-26}$; $x_2 = 2.21\times10^{-10}$

$\Leftrightarrow \quad n = 0.84$

Superconductor (number of atoms) -- $CuAl_{0.84}$

Superconductor (weight) -- $Cu_{73.6\%}Al_{26.4\%}$