

# ANGULAR DEPENDENCE OF D-WAVE SUPERCONDUCTIVITY IN IRRADIATED CUPRATES

Abstract.

We subject the minimized d-wave energy provided for by electromagnetic (e.m) radiation to the thermal activation factor and proceed to obtain transition temperature dependence on zenith and azimuthal angle of the d-electrons in superconducting cuprates. A linear relation of  $T_c$  and zenith angle  $\phi$  is revealed. For  $\phi = 1.68$ ,  $T_c=300K$  is achieved, providing a promising possibility of room temperature superconductivity. A non-linear increase in  $T_c$  is observed when the azimuthal angle is reduced to 0.4 radians. Between 0 – 0.4 radians, the highest  $T_c$  achievable in YBCO and HgBa<sub>2</sub>Ca<sub>2</sub>Cu<sub>3</sub>O<sub>8</sub> is 160 K. The angular part of a wave function of an electron system is responsible for orbital orientation. Hence orbital orientation of the d-electron, to a great extent, influences  $T_c$  of high temperature superconducting cuprates.

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