

# **Disorder as a Source of Pseudogap in Cuprate High Temperature Superconductors**

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## **Abstract**

For over thirty years the mechanism that explains the working of high temperature superconductors (HTS) has been a mirage. Numerous researches to explain this phenomenon from experimental and theoretical point of view has witnessed contradictory results in addition to lack of repetition of the same results when the experiments are repeated with the initial conditions. So far there are basic agreed on properties of cuprate HTS i.e.: Physically cuprate HTS materials are made of bulk perovskite crystals, the critical temperature of most cuprate HTS is above 35 K, most cuprate superconductors possess d-wave symmetry rather than s-wave possessed by conventional superconductors. Pseudogap has been fronted as the harbinger to explain conduction mechanism in cuprate HTS. Pseudogap arises due to interaction between electrons. In this case using second quantization mechanism of an interaction between cooper pair and an electron we were able to note that upper pseudogap temperature ( $T^*$ ) is related to critical temperature ( $T_C$ ) in that  $T^*/T_C=1.11$  (truncated) when relating entropy to temperature

Key words: