Point contact spectroscopy on LSCO material

Eisha Bartwal and Sanjeev Kumar

**Author Affiliations**

**Department of Physics, Chandigarh University, Mohali, Punjab, 140413**

bartwaleisha@gmail.com

hod.physics.uis@cumail.in

**Abstract**. Superconducting state is characterized by a well defined order parameter and the superconducting energy gap which forms at superconducting transition temperature. However, The fundamental mechanism responsible for superconductivity in cooperates is the matter of debate. To study superconductivity in cooperates, point contact Andreev reflection spectroscopy has been used to analyse its superconducting order-parameter. The aim of this paper is to review the recent PCS outcomes achieved on the high TC oxides LSCO, in superconducting conditions. For Andreev kind contracts, the shape of the VI features at the lowest voltage is constant with an s wave symmetry of the state of the superconductor and not with the symmetry of a d waver. The improved conduction and voltage are lower than the gap mentioned a Fermi velocity in the superconducting electrode which is within an element of two of that of the ordinary Au point. These outcomes are interpreted as reflecting a huge correlation impact.

References:

[1] Khodel V, Clark J, Zverev M. Impact of electron-electron interactions on the superfluid density of dirty superconductors. Physical Review B. 2019;99(18).

[2] Wang L, Zhan Y. A conceptual peer review model for arXiv and other preprint databases. Learned Publishing. 2019;.

[3] Narayana N, Bhandi M. ArXiv in the Open Access Era: its usage and impact on physics researchers. Bulletin of the AAS. 2022;.

[4] Khodel V, Clark J, Zverev M. Toward a topological scenario for high-temperature superconductivity of copper oxides. Physics Letters A. 2018;382(45):3281-3286.

[5] Michon B, Kuzmenko A, Tran M, McElfresh B, Komiya S, Ono S et al. Spectral weight of hole-doped cuprates across the pseudogap critical point. Physical Review Research. 2021;3(4).

[6] Khodel V, Clark J, Zverev M. Topological Scenario for High-Temperature Superconductivity in Cuprates. JETP Letters. 2018;108(4):260-269.

[7] Michon B, Ataei A, Bourgeois-Hope P, Collignon C, Li S, Badoux S et al. Wiedemann-Franz Law and Abrupt Change in Conductivity across the Pseudogap Critical Point of a Cuprate Superconductor. Physical Review X. 2018;8(4).

[8] Horio M, Kramer K, Wang Q, Zaidan A, von Arx K, Sutter D et al. Oxide Fermi liquid universality revealed by electron spectroscopy. Physical Review B. 2020;102(24).

[9] Horio M, Hauser K, Sassa Y, Mingazheva Z, Sutter D, Kramer K et al. Three-Dimensional Fermi Surface of Overdoped La-Based Cuprates. Physical Review Letters. 2018;121(7).