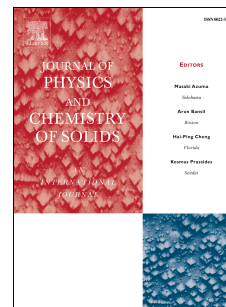


# Accepted Manuscript

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## Probing unconventional pairing in $\text{LaO}_{0.5}\text{F}_{0.5}\text{BiS}_2$ layered superconductor by point contact spectroscopy

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### Abstract

We performed point contact spectroscopy experiments on the layered superconductor  $\text{LaO}_{0.5}\text{F}_{0.5}\text{BiS}_2$  by pushing mechanically etched gold tip on the surface of polycrystalline samples. We measured low temperature differential conductance curves for several contacts obtained by tuning the tip pressure/position. Conductance features appeared with different shape, amplitude and energy. Non conventional *d*-wave symmetry of the superconducting order parameter is argued. A comprehensive scenario explaining all the conductance features is discussed, considering the possible formation of intergrain Josephson junction in series with the point contact due to the polycrystalline nature of the sample. Superconducting energy gap is estimated in the range  $4.2 \div 4.8$  meV, showing a BCS-like temperature behavior and signature of strong coupling with a BCS ratio  $9.7 < 2\Delta/(K_B T_C) < 11.1$ .

**Keywords:** Point contact spectroscopy; pairing symmetry; unconventional superconductivity; layered superconductors;  $\text{BiS}_2$ .

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