Effect of k_z variation of $d_{a^2-b^2}$-wave order parameter on c-axis tunneling spectroscopy

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Abstract

The effect of k_z variation of the superconducting $d_{a^2-b^2}$-wave order parameter on c-axis tunneling spectra of metal–superconductor junctions is theoretically investigated. In the high transmission limit, the variation does not cause obvious changes in the shape of the conductance spectrum, while in the tunneling limit the effect is more apparent. The coherence peak of the conductance spectrum gets wider as the variation of the order parameter is larger. The effect of the variation can be seen more clearly in the spectrum of the derivative of the conductance in both limits.

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