

Spin-Polarized Tunneling Spectroscopy and Shot Noise in Ferromagnet/f-Wave Superconductor Junctions

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Abstract: The tunneling spectroscopy and shot noise in ferromagnet/insulator/triplet-superconductor (FM/I/triplet-SC) structures are studied by taking into account the roughness interfacial barrier and exchange splitting in the FM. For the triplet-SC of Sr_2RuO_4 , we consider two-dimensional f-wave order parameter symmetries having nodes within the RuO_2 plane, which reasonably describe both thermodynamic and thermal conductivity data. It is shown that the ferromagnetic exchange splitting gives rise to a decrease in the differential conductance, the average current, and the shot noise power, while the noise power-to-current ratio is increased; the interface roughness is found to lead to a decrease in the differential conductance and the average current, and an increase in the noise power-to-current ratio.

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Key words: tunneling spectroscopy, shot noise, ferromagnet, f-wave superconductor

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