Josephson Current in Superconductor-Ferromagnet/Insulator/d-Wave Superconductor Junctions

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Abstract: Solving the Bogoliubov-de Gennes equation, the energy levels of bound states are obtained in the ferromagnetic superconductor. The Josephson currents in a ferromagnetic superconductor/Insulator/d-wave superconductor junction are calculated as a function of the exchange field, temperature, and insulating barrier strength. It is found that the Josephson critical current is always suppressed by the presence of exchange field h and depends on crystalline axis orientation of d-wave superconductor.

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