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dc Josephson Effect in s-Wave Superconductor/Ferromagnet Insulator/p-Wave Superconductor Junctions

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Abstract: The Josephson currents in s-wave superconductor/ferromagnet insulator/p-wave superconductor(s/FI/p) junctions are calculated as a function of temperature and the phase taking into account the roughness scattering effect at interface. The phase dependence of the Josephson current $I(\varphi)$ between s-wave and p_x-wave superconductor is predicted to be $\sin(2\varphi)$. The ferromagnet scattering effect, the barrier strength, and the roughness strength at interface suppress the dc currents in s/FI/p junction.

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Key words: ferromagnet insulator, p-wave superconductor, dc Josephson current

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