第２９回トポロジカル物質科学セミナー
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Cooper pair splitting in diffusive magnetic SQUIDs

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Abstract:

We study Josephson junctions with weak links consisting of two parallel disordered arms with magnetic properties – ferromagnetic, half-metallic or normal with magnetic impurities. In the case of long links, the Josephson effect is dominated by mesoscopic fluctuations. In this regime, the system realizes a phi_0 junction with sample-dependent phi_0 and critical current. Cooper pair splitting between the two arms plays a major role and leads to 2*Phi_0 periodicity of the current as a function of flux between the arms. We calculate the current and its flux and polarization dependence for the three types of magnetic links [1].

[1] arXiv:1609.01234