

Abstract Submitted
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Measurement of Aharonov-Casher effect in a Josephson junction chain¹ IOAN MIHAI POP, CNRS, Institut NEEL, Grenoble, FLORENT LECOCQ, BERNARD PANNETIER, OLIVIER BUISSON, WIEBKE GUICHARD, CNRS, Institut NEEL, Grenoble — We have recently measured the effect of superconducting phase-slips on the ground state of a Josephson junction chain² and a rhombi chain.³ Here we report clear evidence of Aharonov-Casher effect in a chain of Josephson junctions. This phenomenon is the dual of the well known Aharonov-Bohm interference. Using a capacitively coupled gate to the islands of the chain, we induce oscillations of the supercurrent by tuning the polarization charges on the islands. We observe complex interference patterns for different quantum phase slip amplitudes, that we understand quantitatively as Aharonov-Casher vortex interferences.

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²I. M. Pop et al. Nature Physics 6, 589–592 (2010)

³I. M. Pop et al. PRB, 78, 104504 (2008)

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