Contribution ID: **317** Type: **Oral**

Magnetization reversal by superconducting current in superconductor/ferromagnetic/superconductor Josephson junctions

We study magnetization reversal in a superconductor/ferromagnetic/superconductor Josephson junction with direct coupling between magnetic moment and Josephson current. Our simulations of magnetic moment dynamics show that by applying an electric current pulse, we can realize the full magnetization reversal. We propose different protocols of full magnetization reversal based on the variation of the Josephson junction and pulse parameters, particularly, electric current pulse amplitude, damping of magnetization and spin-orbit interaction. We discuss experiments which can probe the magnetization reversal in the similar junctions.

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Track Classification: Theoretical Physics