

## Highlights

Superconducting and correlated low dimensional materials and devices for quantum electronics and spintronic - 2018

### RF assisted switching in magnetic Josephson junctions

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JOURNAL OF APPLIED PHYSICS 123 (2018) 133901

In this work we have tested the effect of an external RF field on the switching processes of magnetic Josephson junctions (MJJs) that have already been used as elementary cells of cryogenic memories compatible with Single Flux Quantum logic. We have shown that the combined application of microwaves and magnetic field pulses improves the performances of the device, increasing the separation between the critical current levels corresponding to the two logical states '0' and '1'. The enhancement of the current level separation can be as high as 80% using an optimal set of parameters. The relevance of this work resides in the demonstration of the use of external RF fields as additional tools to manipulate the memory states. We expect that this approach may lead to the development of new methods of selecting MJJs and manipulating their states in memory arrays for various applications.

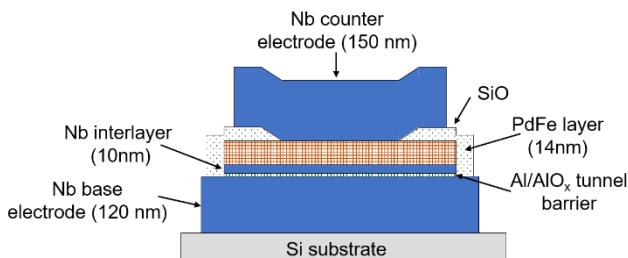


Fig. 1: Section scheme of the junction analyzed in this work (not in scale), with layer thicknesses marked

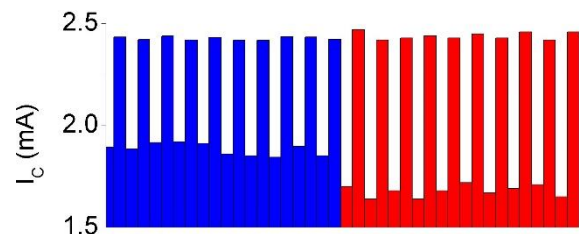


Fig. 2: Critical current levels  $I_c$  for the two logical states '0' and '1' in absence (blue bars, left) and in presence (red bars, right) of an external RF field