Bit-error rate in Ni-based Magnetic Tunnel-Junction

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Contemporary magnetic tunnel junctions (MTJ) take advantage of the perpendicular reference layer pinned to a synthetic antiferromagnet (SAF) made of Pd or Pt layers. We fabricate alternative MTJ structures made only of abundant material [1]. Ni-Co superlattice enables reduction of the fabrication cost comparing to traditional Pt- or Pd-based SAF layer. Both critical current density and high thermal stability of the proposed MTJ are sufficient for memory applications. Nevertheless, another parameter which describes usability of spintronic devices in the memory field is called bit-error rate (BER) [2]. We perform BER measurement using a dedicated hardware enabling investigation of up to 1e9 switching events. These measurements can allow us to determine the lowest energies required for MTJ write process in state-of-the-art memory cells.

References:

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