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Magneto-electric control of magnetization in a chain of circular nanomagnets as new paradigm for ultra low power binary information propagation. MOHAMMAD SALEHI-FASHAMI, University of Delaware, MAMUN AL-RASHID, Virginia Commonwealth University, WEI-YANG SUN, PAUL NORDEEN, University of California,Los Angeles, SUPRIYO BANDYOPADHYAY, Virginia Commonwealth University, GREGORY CARMAN, University of California,Los Angeles, JAYASIMHA ATULASIMHA, Virginia Commonwealth University — Elliptical nanomagnets with bi stable magnetization states are traditionally employed for dipole coupled Bennett clocked nanomagnetic logic.Logic bits are propagated down a chain of nanomagnets by sequentially rotating their magnetizations with an electric field [1].In this talk,we present for the first time,the notion of replacing elliptical nanomagnets with circular nanomagnets that have no inherent shape anisotropy.The circular nanomagnets would develop bi stable magnetization orientations with the application of an electrical field to induce in-plane strain anisotropy.This new strategy provides two significant advantages for nanomagnetic logic applications:(i)re-orienting the magnetizations does not require overcoming a shape-anisotropy energy barrier and hence the electric field needed to reorient is reduced,leading to lower energy dissipation in the clocking process,and(ii)scalability to dimensions substantially smaller than what presently exists becomes possible.[1]J.Atulasimha and S.Bandyopadhyay, Appl. Phys. Lett., 97, 173105 (2010).This work was supported by NSF CAREER grant CCF-1253370 and by FAME,one of six centers of STARnet,Semiconductor Research Corporation program sponsored by MARCO and DARPA.

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