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Switching fixed skyrmions with electrical field in the presence of thermal noise[1] DHRITIMAN BHATTACHARYA, MD MAMUN AL-RASHID, JAYASIMHA ATULASIMHA, Virginia Commonwealth Univ — Switching deterministically and reliably between core pointing up and core pointing down states of magnetic skyrmions could lead to an energy efficient paradigm for the realization of nanomagnetic memory. Perpendicular magnetic anisotropy (PMA) in a ferromagnet/oxide interface can be modulated by employing an electric field and thereby cause core reversal of magnetic skyrmions with an electric field without needing a magnetic field or spin current [1]. Furthermore, in devices that are switched with spin current, voltage control of magnetic anisotropy can reduce the critical current density required for such a reversal [2]. However, switching probability (error) in the presence of thermal noise in these reversal mechanisms is key to their performance. Here, we present stochastic magnetization dynamics simulations to establish switching error at room temperature, how it is impacted by intermediate magnetic states visited and interface properties (i.e. PMA and Dzyaloshinskii-Moriya interaction). 1. D Bhattacharya, MM Al-Rashid, J Atulasimha, Sci. Rep. 6, 31272, 2016 2. D Bhattacharya, MM Al-Rashid, J Atulasimha, arXiv 1611.03138, 2016

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Dhritiman Bhattacharya
Virginia Commonwealth Univ

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