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The effect of current-induced spin switching in the presence of quantum tunneling of magnetization MACIEJ MISIORNY[1], Forschungszentrum Juelich, JÓZEF BARNAŚ, Adam Mickiewicz Univeristy — Knowledge of transport properties of individual large-spin ($S > 1/2$) atoms/molecules exhibiting magnetic anisotropy is of key importance from the point of view of information processing technologies [1]. The ultimate aim is to incorporate such objects as functional elements of spintronic devices, with the objective of employing spin-polarized currents to control the magnetic state of the system. In particular, for an atom/molecule with the predominant *'easy-axis' uniaxial* magnetic anisotropy this allows for switching the system's spin between two metastable states [2,3]. However, the *uniaxial* component of magnetic anisotropy, underlying the magnetic bistability, is frequently accompanied by the *transverse* one, whose presence manifests, e.g., as quantum tunneling of magnetization (QTM). Here, we show that not only does QTM induce an effective energy barrier for the spin switching, but also its effect on the transport reveals as an additional signal in transport characteristics. Furthermore, we propose how to experimentally investigate QTM by means of the STM inelastic transport spectroscopy. [1] M. Mannini et al., Nature Mater. 8, 194 (2009); [2] M. Misiorny and J. Barnaś, Phys. Rev. B 75, 134425 (2007); [3] S. Loth et al., Nature Phys. 6, 340 (2010).

[1]also at Adam Mickiewicz University

Maciej Misiorny
Adam Mickiewicz Univeristy

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