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Precise control of vortex chirality and polarity in "Pac-Man"-like magnetic nanodots by in-plane magnetic field[1] VLADIMIR CAMBEL, JAROSLAV TÓBIK, Institute of Electrical Engineering, Slovak Academy of Sciences, Slovakia, GORAN KARAPETROV, Department of Physics, Drexel University and Institute of Electrical Engineering, Slovak Academy of Sciences — Here we explore size-dependent magnetic states of sub-100 nm Permalloy nanomagnets of specific geometry. The geometry is suitable for independent setting and readout of vortex polarity and chirality by applying *in-plane magnetic fields* only. Micromagnetic calculations show that in "Pac-Man"-like magnetic nanodots the relaxation channels to specific chirality and polarity states from uniform magnetization state are deterministic and are not influenced by the presence of moderate out-of-plane fields. The particular geometry opens straight channel for magnetization relaxation towards stable closure-domain vortex state with specific chirality and polarity. We explore a wide geometrical phase space in search for stable and predictable remanent vortex configurations. We find that in these nanomagnets the write process is simple and the signal is easily readable.

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