Supplementary Video 1 legend:

Movie of a spin-torque induced magnetic vortex oscillation composed of magnetic images taken at 16 evenly spaced phases. The sample is excited by a direct current of 7.8 mA and it oscillates at 0.95 GHz. The field of view of the movie is 400 nm x 400 nm. This movie shows that the vortex core (white) undergoes a clockwise motion.

Supplementary Video 2 legend:

Movie of the same sample but with an opposite vortex core polarization. The sample is excited by a direct current of 5.1 mA and it oscillates at 1.26 GHz. This movie shows that the vortex core (black) undergoes a counterclockwise motion.