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Trajectory of dynamically propagating magnetic domain walls at nanowire vertices DAVID M. BURN, STEPHANIE K. WALTON, MEGHA CHADHA, KATHARINA ZEISSLER, LESLEY F. COHEN, WILL R. BRANFORD, Imperial College London, UK; London Center for Nanotechnology, UK, FUNCTIONAL MAGNETISM TEAM — Nanoscale patterning techniques can be used to fabricate magnetic nanowire structures where the behavior of individual magnetic domain walls (DWs) can be investigated. In addition to the fundamental physical understanding of magnetism, research in this area is also driven by the potential to realize novel spintronic devices for technological applications. Magnetic DWs can support a wide variety of micromagnetic structures with different magnetization, chirality and topology based on their interaction with the nanostructure geometry. These interactions can govern the field dependent domain wall trajectory and subsequent magnetization reversal that takes place within nanowire vertex structures. In this work the additional factors affecting the trajectory due to the dynamic behavior of propagating DWs are investigated. This includes the time dependent periodic changes in the DW micromagnetic structure from Walker breakdown. These results have implications for future technological applications as well as suggesting processes that may govern magnetization reversal in artificial spin ice structures.

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