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Control and influence of domain wall chirality in Artificial Spin Ice STEPHANIE WALTON, KATHARINA ZEISSLER, Imperial College London, SAM LADAK, DAN READ, Cardiff University, TOLEK TYLISZCZAK, Lawrence Berkeley National Laboratory, LESLEY COHEN, WILL BRANFORD, Imperial College London — Artificial Spin Ice, comprising ferromagnetic nanobars arranged in a honeycomb geometry, is a directly imageable frustrated system which has demonstrated rich Physics. Its magnetic reversal is mediated by domain wall propagation in the presence of external magnetic fields. These domain walls carry magnetic charge and have a distinct structure or “chirality,” namely up or down in the transverse domain wall regime or clockwise or anticlockwise in the vortex domain wall regime. In this talk, both experimental Scanning Transmission X-ray Microscopy and micro-magnetic simulations which suggest that the domain wall performs a non-random walk through Artificial Spin Ice due to its chirality are presented. In addition, the role of Walker Breakdown in both the transverse and vortex domain wall regimes is discussed. Furthermore, modes of controlling and measuring domain wall chirality are explored.

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