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Formation and structure of 360 and 540 degree domain walls in thin magnetic stripes[1] MARK MASCARO, YOUNGMAN JANG[2], Massachusetts Institute of Technology, S.R. BOWDEN, J. UNGURIS, Center for Nanoscale Science and Technology, National Institute of Standards and Technology, C.A. ROSS, Massachusetts Institute of Technology — A method is presented for forming a 360° domain wall (DW) and more complex structures such as a 540° DW in a wire attached to an injection pad by applying an alternating in-plane field perpendicular to the wire. SEMPA, MFM measurements and OOMMF micromagnetic simulations give a consistent picture of the magnetic structure and stray field distribution of the 360° DW. Equilibrium 360° DWs in wires have a well-defined structure and size, persist over a wide field range, and can be distinguished from configurations consisting of two 180° DWs pinned near each other. The formation and stability of these complex walls has implications in memory and logic devices based on field- or current-induced DW motion, where impingement of adjacent 180° DWs can produce composite DWs whose behavior and stray field distribution differ significantly from that of a 180°DW, and these structures could also be used to examine intriguing resonant behavior as predicted by modeling. [Phys. Rev. B 82, 214411; Phys. Rev. B 82, 134411]

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