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Imaging Antiferromagnetic Domain Walls with the Hall Effect R. JARAMILLO, T. F. ROSENBAUM, University of Chicago, E. ISAACS, Argonne Nat'l. Lab, G. AEPPLI, University College, London — We find that the Hall effect in the spin-density-wave state of elemental chromium is acutely sensitive to the underlying domain structure. A large (20% effect) hysteresis in the linear Hall coefficient emerges as a function of temperature between the spin-flip (123 K) and Neel (311 K) transitions. The hysteresis is accompanied by a pronounced increase in the noise. Scratching the surface of a clean single crystal can pin the domains, suppressing the hysteresis loop and curtailing the motion of the spin domain walls in the transverse antiferromagnetic phase. Changing the relative orientations of the current flow and the pinning directions alters the preferred state of the system.

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