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Aging in Magnetic Superlattices TATHAGATA MUKHERJEE, MICHEL PLEIMLING, Virginia Polytechnic Institute and State University, CHRISTIAN BINEK, University of Nebraska — Aging phenomena can be observed in non-equilibrium systems with slow relaxation dynamics. Magnetic specimens with well defined interactions and dimensions can serve as model systems for universal aspects of aging. Magnetic thin films provide access to a wide range of microscopic parameters. Superlattice structures allow tuning the intra and inter-plane exchange and enable geometrical confinement of the spin fluctuations. We use Co/Cr thin film superlattices to study magnetic aging. The static and dynamic magnetic properties are affected via the Co and Cr film thicknesses. The Curie temperature of the Co films is reduced from the bulk value by geometrical confinement. Cr provides antiferromagnetic coupling between the Co films. In-plane magnetic set fields of some 10-100 mT are applied and the sample is exposed to the latter for various waiting times. After removing the field, relaxation of the magnetization is recorded via longitudinal Kerr-magnetometry and SQUID. The relaxation data are analyzed by scaling plots revealing universal aspects of aging. Financial support by NRI, and NSF through EPSCoR, Career DMR-0547887, DMR-0904999, and MRSEC.

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