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Exploring the Aging Effects in Pinned Vortex Lattices in Nb using Neutron Reflectometry XI WANG, HELEN HANSON, XINSHENG LING, Brown University, BRIAN MARANVILLE, NIST — We report the first experiment using neutron reflectometry to explore the aging effects in pinned vortex lattices in Nb. A striking prediction of the Bragg glass model is the existence of a pinned elastic Bragg glass solid matter in the vortex state of weakly disordered type-II superconductors. According to this model, the system is pinned in the random-manifold regime with local metastable states, yet at large length scale, the system remains elastic. This seemingly paradoxical property is predicted to lead to novel aging dynamics. This work was supported by a grant from DOE-BES. The experiments were carried out at NG-1- Advanced Neutron Diffractometer facility at NIST NCNR.

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