Abstract Submitted
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Local Atomic Structure and Magnetism in Amorphous Fe_xSi_{1-x} Thin Films FRANCES HELLMAN, University of California, Berkeley, YANNING ZHANG, Department of Physics and Astronomy, University of California, Irvine, CA, CATHERINE BORDEL, Physics Department, University of California, Berkeley, CA, KEVIN STONE, Materials Science Division, Lawrence Berkeley National Lab, Berkeley, CA, CATHERINE JENKINS, Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, DAVID SMITH, Department of Physics, Arizona State University, Tempe, AZ, J. HU, RUQIAN WU, Department of Physics and Astronomy, University of California, Irvine, CA, STEVE HEALD, Advanced Photon Source, Argonne National Laboratory, Argonne, IL, JEFF KORTRIGHT, Materials Science Division, Lawrence Berkeley National Lab, Berkeley, CA, JULIE KAREL[1], University of California, Berkeley, CA — Amorphous FexSi1-x thin films exhibit a large enhancement in M compared to crystalline films with the same composition ($0.45<x<0.75$). XMCD shows enhancement in both spin and orbital moments. Density functional theory (DFT) calculations reproduce this enhanced magnetization. DFT and EXAFS show the amorphous materials have decreased number of nearest neighbors and reduced number density relative to crystalline samples of same x, which leads to the enhanced moment.

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