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Effects of strain and surfaces on the antiferromagnetic and ferromagnetic phases of thin film FeRh FRANCES HELLMAN[1], CATHERINE BORDEL, Department of Physics, University of California, Berkeley, CHLOE BALDASSERONI, Department of Materials Science and Engineering, University of California, Berkeley, CORY ANTONAKOS, Department of Chemistry, University of California, Berkeley, OLIVER SCHNEIDER, University of Wuerzburg, Germany, GUNAR PAL, Department of Physics, University of California, Davis, SERGIO VALENCIA, AKIN UNAL, FLORIAN KRONAST, Helmholtz Zentrum-Berlin für Materialien und Energie GmbH, Albert-Einstein-Straße 15, D-12489 Berlin,, SLAVO NEMSAK, CHUCK FADLEY, Department of Physics, University of California, Davis, JULIE BORCHERS, BRIAN MARANVILLE, NIST Center for Neutron Research, National Institute of Standard and Technology, Gaithersburg, MD — FeRh undergoes an unusual antiferromagnetic (AFM) to ferromagnetic (FM) first order transition just above room temperature. This transition can be tuned by pressure, magnetic field, composition, and strain. The underlying source of the transition is still under much discussion, but it is clear from a variety of measurements that electronic structure, lattice, and magnetic excitations all play roles in contributing the underlying entropy difference and hence the competition between AFM and FM states. The surface and bottom interface of thin films are often found to be FM even while the bulk of the film is AFM. The source of this effect, along with the dependence of strain on both anisotropy and transition temperature will be presented and discussed.

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