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Neutron scattering in detwinned $SrFe_2As_2$ single crystals LI ZHANG, China Jiliang University/Rice University, YU SONG, YU LI, RUI ZHANG, WEIYI WANG, HAORAN MAN, PENGCHENG DAI, Rice Univerity — **Abstract**:Large $SrFe_2As_2$ single crystals (2cm) were grown with self-flux method. The basic sample characterizations were described by XRD, MPMS and PPMS. Orthorhombic a along horizontal orientation and b along vertical orientation were determined by X-ray Laue diffraction. The crystals were cut into rectangular pieces along the [1,1,0] and [1,-1,0] directions by high precision wire saw. The device for sample detwinning was made of 6061 aluminum alloy with low neutron incoherent scattering cross section. Uniaxial pressure can be applied by a spring along orthorhombic [0,1,0] direction by tuning the screw in one end. The pressure can be calculated by the known elasticity coefficient (k = 10.5 N/mm) and the compression of the spring (Δx) [1]. Our neutron scattering experiments were carried out using the MAPS at the ISIS in England. Low Energy (such as Ei=80meV) with different temperatures ,especially around (TN = Ts = 193 K) is done in the time-of-fight experiment[2]. It is interesting to find out the pressure induced spin excitation anisotropy. After careful analysis,we conclude that resistivity and spin excitation anisotropies are likely intimately connected. The results also compared with similar experiment in parent BaFe2As2 in Murlin at the ISIS. **Keywords:** neutron scattering, detwin, $SrFe_2As_2$, single crystals Figure 1, Large $SrFe_2As_2$ single crystals grown with self-flux method. References: [1] Xingye Lu *et al.*, Science 345, 657 (2014). [2] Pengcheng Dai, Rev. Mod. Phys. 87, 855(2015).

Li Zhang
China Jiliang University/Rice University

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