

Abstract Submitted  
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**SANS Study of Edge-Contaminated Vortex States in a  $V_{21at\%}$  Ti Superconducting Alloy**<sup>1</sup> X.S. LING, N.D. DANILIDIS, I.K. DIMITROV, Brown University — In this talk, we report the first direct observation of edge-contaminated vortex matter using small angle neutron scattering (SANS). The vortex structures of Zero Field Cooled and Field Cooled states in a high- $\kappa$  superconducting alloy have been studied using SANS. In this sample FC states are partially ordered as shown by the coexistence of a diffuse scattering ring with two Bragg peaks. ZFC states are disordered at low fields and more disordered than FC states at all fields. For example, the ZFC vortex state at  $H=6$  kOe gives a diffuse ring indicating an amorphous state. Upon further increasing the field, Bragg peaks emerge from the ring, indicating ordering. On increasing temperature from the disordered structure at 6 kOe, the ring gradually transforms into distinct peaks. The experiments were performed at the NIST Center For High Resolution Neutron Scattering (CHRNS).

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