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**Imaging domain walls between nematic quantum Hall phases on the surface of bismuth** HAO DING, MALLIKA T. RANDERIA, BENJAMIN E. FELDMAN, HUIWEN JI, ROBERT J. CAVA, ALI YAZDANI, Princeton University — The sensitivity of nematic electronic phases to disorder results in short range ordering and the formation of domains. Local probes are required to investigate the character of these domains and the boundaries between them, which remain hidden in global measurements that average over microscopic configurations. In this talk, I will describe measurements performed with a scanning tunneling microscope to study local nematic order on the surface of bismuth at high magnetic field. By imaging individual anisotropic cyclotron orbit wavefunctions that are pinned to atomic-scale surface defects, we directly resolve local nematic behavior and study the evolution of nematic states across a domain wall. Through spectroscopic mapping, we explore how the broken-symmetry Landau levels disperse across the domain wall, the influence of exchange interactions at such a boundary, and the formation of one-dimensional edge states.

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