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**Probing the Magnetic Order of  $\text{UPt}_3$  by Magnetoresistance**

THOMAS M. LIPPMAN, JOHN P. DAVIS, HYOUNGSOON CHOI, JOHANNES POLLANEN, WILLIAM J. GANNON, WILLIAM P. HALPERIN, Northwestern University — It is believed that magnetic order has a strong influence on the unconventional superconducting state of  $\text{UPt}_3$ , both as a symmetry breaking field that splits two degenerate superconducting phases, and as an element of the pairing mechanism. There are conflicting reports of the behavior at 5 K, static antiferromagnetic order versus slow fluctuating magnetism. We present measurements of the temperature dependence of the magnetoresistance in bulk single crystals of  $\text{UPt}_3$ . Below 5 K, we observe an onset and subsequent rapid increase of a term linear in the applied field. With the field in the basal plane, this linear contribution is positive with current along the c-axis and negative with the current along the b-axis. We identify this behavior in the magnetoresistance with observation of magnetic Bragg peaks from neutron scattering that appear below 5 K. We discuss preliminary results of similar measurements at temperatures in the millikelvin range.

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