

Abstract Submitted
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High-Bandwidth Scanning Hall Probe Microscopy of Superconducting Flux Vortices¹ A. D. DEMANN, S. B. FIELD, Colorado State University — Type-II superconductors experience a mixed state in which lines of quantized magnetic flux penetrate the bulk of the superconducting material. These *vortices* interact with one another, electrical currents, and local material parameters. Traditional low-bandwidth (~ 100 Hz) scanning Hall probe microscopy (SHPM) has often been employed to image the static configurations caused by these interactions. However, the limited bandwidth and slow scan times of traditional SHPM do not allow dynamical states of moving vortices to be imaged; such studies require signal bandwidths in the MHz range. By developing specialized Hall sensors and a cryogenic JFET preamplifier, we have extended the operating bandwidth of our SHPM to ~ 10 MHz.

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August DeMann
Colorado State Univ

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