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Single Vortex Resolution Imaging of the Flux Front in a $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Single Crystal LAN LUAN, O. M. AUSLAENDER, K. A. MOLER, Stanford University, D. A. BONN, RUIXING LIANG, W. N. HARDY, University of British Columbia — We have imaged the vortex state in an optimally doped, detwinned $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ single crystal, using magnetic force microscopy (MFM). The structure of the flux front, the boundary between vortices and anti-vortices, is studied with single vortex resolution, as it evolves with applied magnetic field. We find the front to be corrugated on a scale of several microns. On a smaller scale, the front is composed of alternating “fingers” of vortices and anti-vortices. We also observe stable vortex-antivortex pairs.

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