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Direct observation of jamming of superconducting vortices in a funnel structure VITALII VLASKO-VLASOV, TIM BENSEMAN, ULRICH WELP, WAI KWOK, Argonne National Laboratory — Arrest of the vortex dynamics at elevated temperatures is an imperative for using benefits of high Tc in cuprate superconductors. Here we explore experimentally a possibility of using funnel geometries for attenuation of the vortex motion. A single funnel structure is sculptured into a twin free single crystal of YBCO using laser lithography and ion milling. The magnetic field penetration patterns are studied using magneto-optical imaging technique at different temperatures below Tc. In ramping up fields we observe an increase of the vortex density in the throat of the funnel structure showing the jamming of vortices at the entry into narrow vortex channel. The effect is discussed using results of recent numerical simulations. This work was supported by UChicago Argonne, LLC, under contract No. DE-AC02-06CH11357.

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