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Mapping imaging transfer functions through holographic field correlations FRANCISCO SALCES-CARCOBA, C. J. BILLINGTON, E. ALUNTAS, Y. YUE, I. B. SPIELMAN, Joint Quantum Institute, University of Maryland, College Park and NIST — Holographic microscopy recovers both the phase and amplitude of an optical field through a calibrated interferogram. We combine holographic imaging and *in-situ* microscopy to image elongated superfluids. By looking at the scattered field density correlations of an otherwise point correlated ensemble, we study an aberrated imaging transfer function. A regularized inversion digitally frees our images from the detected aberrations, improving our imaging performance with optimal signal-to-noise ratio.

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