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Imaging the Anisotropic Nonlinear Meissner Effect in Unconventional Superconductors[1] STEVEN ANLAGE, Physics Dept., University of Maryland, A.P. ZHURAVEL, Verkin Inst. Low Temp Physics, NAS Ukraine, Kharkov, B.G. GHAMSARI, C. KURTER, J. ABRAHAMS, Physics Dept., University of Maryland, S. REMILLARD, Hope College, P. JUNG, A.V. LUKASHENKO, ALEXEY USTINOV, CFN, Karlsruhe Inst. Tech., Germany — We have directly imaged the anisotropic nonlinear Meissner effect in an unconventional superconductor through the nonlinear electrodynamic response of both (bulk) gap nodes and (surface) Andreev bound states [1]. A superconducting thin film is patterned into a compact self-resonant spiral structure, excited near resonance in the radio-frequency range, and scanned with a focused laser beam perturbation. At low temperatures, direction-dependent nonlinearities in the reactive and resistive properties of the resonator create photoresponse that maps out the directions of nodes, or of bound states associated with these nodes, on the Fermi surface of the superconductor. The method is demonstrated on the nodal superconductor YBa_2Cu_3O_7-\delta and the results are consistent with theoretical predictions for the bulk and surface contributions. [1] A. P. Zhuravel, *et al.*, arXiv:1208.1511.

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