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New Method for Inverting X-ray Holographs YUHAO WANG, New Jersey Institute of Technology, JIANMING BAI, University of Tennessee, TREVOR A. TYSON, New Jersey Institute of Technology, PETER SIDDONS, GIANLUIGI DE GERONIMO, Brookhaven National Laboratory — The matrix solving method is a new class of methods to be applied to inverting an x-ray holograph for obtaining real space structures. The method is shown to provide better resolution and more flexibility than Fourier transform methods. Simulations suggest that non-direct scheme non-indirect scheme x-ray fluoresce holograph, measured with both fixed light source and fixed detector can be inverted with the matrix solving method. Applying pre-determined non negative restrictions can improve the spatial resolution and approach the wavelength of the measuring x-rays. Experimental details and methods for measuring x-ray florescence holography with the matrix solving inversion is discussed. This work is supported by NSF DMR grant MRI-0722730.

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