

Abstract Submitted  
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**Diffraction Imaging of Single Viruses** ROBERT CORIDAN, Department of Physics, University of Illinois at Urbana-Champaign, JOHN BUTLER, Department of Materials Science & Engineering, University of Illinois at Urbana-Champaign, THOMAS ANGELINI, Department of Physics, University of Illinois at Urbana-Champaign, GERARD C.L. WONG, Department of Materials Science & Engineering, Department of Physics, Department of Bioengineering, University of Illinois at Urbana-Champaign — The resolution of Electron Microscopy (EM) images is limited by instrumentation lens aberration. Nanobeam electron diffraction in principle allows for diffraction-limited resolution analysis of single particles. However, images are not directly recoverable from the diffraction pattern due to the well-known phase problem. Algorithms for solving the phase problem have long been a topic of theoretical research, but only recently has diffractive imaging been experimentally actualized using coherent diffraction. We will discuss these algorithms and the potential of improving the resolution of TEM imaging of biomolecular systems through a combination of these algorithms and cryogenic sample preparation. Preliminary data on single virus diffraction data will be presented.

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