

1108-78-519

**Wenjing Liao\*** ([wjliao@math.duke.edu](mailto:wjliao@math.duke.edu)), 3611 University Drive, Apt 11R, Durham, NC 27707, and **Albert Fannjiang** ([fannjiang@math.ucdavis.edu](mailto:fannjiang@math.ucdavis.edu)), Department of Mathematics, One Shields Avenue, Davis, CA 95616. *Fourier phase retrieval with phase-uncertain mask.*

Fourier phase retrieval is the problem of recovering images from their Fourier intensity data. The standard Fourier phase retrieval (without a mask) is known to have many solutions which cause the standard phasing algorithms to stagnate and produce wrong or inaccurate solutions. In this talk Fourier phase retrieval is studied with the introduction of a randomly fabricated mask. Uniqueness of solution with exact knowledge of the mask was previously proved by Fannjiang. Recently we have extended the uniqueness result to the case that only rough information about the mask is known. New phasing algorithms alternating between the object update and the mask update are demonstrated to have the capability of recovering both the object and the mask (within the object support) simultaneously, consistent with the uniqueness result. We also show that phase retrieval with phase-uncertain mask is robust with respect to the correlation in the mask as well as the Gaussian and Poisson noises. (Received January 20, 2015)