

1096-VL-2542 **Ian D Neufer*** (ineufer@asu.edu), 1732 E Alameda Dr, Tempe, AZ 85282, and **Rodrigo B Platte**. *Reconstruction of functions from Fourier data using Gaussian based approximations* Preliminary report.

The conversion between Fourier and image data arises in many applications, such as Magnetic Resonance Imaging (MRI). This talk lays out a novel approach for translating Fourier data by fitting it to a sum of Gaussian functions. Our approach is motivated by the easy transformation of Gaussian functions between Fourier and physical space. The coefficients of the Gaussian functions are obtained by solving a least squares system. Issues that arise are the Gibbs effect which causes wild oscillations around function discontinuities that blur image features, and motion artifacts, which are features not in the object that appear due to movement during the scan. To mitigate the Gibbs Effect, we use first derivative damping and filter our data. Further, our method allows for more flexibility in how data is sampled, which coupled with a future research possibility, spiral sampling, may allow for a reduction in motion artifacts. (Received September 17, 2013)