

1096-65-1946

Anne Gelb (annegelb@asu.edu), Box 1804, Arizona State University, Tempe, AZ 85287-1804, and **Adita Viswanathan*** (aditya.v@caltech.edu), Department of Applied and Computational Mathematics, California Institute of Technology, Pasadena, CA. *Numerical Approximation Methods for Non-Uniform Fourier Data.*

This talk is about reconstructing compactly supported piecewise smooth functions from non-uniform samples of their Fourier transform. This problem is relevant in applications such as magnetic resonance imaging (MRI) and synthetic aperture radar (SAR).

While the non-uniform FFT (convolutional gridding) algorithm provides a practical way to reconstruct images, it is evident that if the method's parameters, usually determined heuristically, are not properly chosen, then it may not converge. This talk provides a mathematical foundation, through the use of Fourier frames, for reconstructing functions from their non-uniform Fourier data. As a result, numerical convergence and robustness can be guaranteed for various non-uniform sampling schemes typical in MRI. (Received September 16, 2013)