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Weidong Chen* (weidong.chen@mnsu.edu). *Computation Of Two-Dimensional Fourier Transforms For Noisy Band-Limited Signals.*

The computation of the two-dimensional Fourier transform by the sampling points creates an ill-posed problem. In this presentation, we will cover this problem for the band-limited signals in the noisy case. We will present a regularized algorithm based on the two-dimensional Shannon Sampling Theorem, the two-dimensional Fourier series, and the regularization method. First, we prove the convergence property of the regularized solution according to the maximum norm. Then an error estimation is given according to the L^2 -norm. The convergence property of the regularized Fourier series is given in theory, and some examples are given to compare the numerical results of the regularized Fourier series with the numerical results of the Fourier series. (Received September 17, 2018)