1106-46-2890   **L. Hall*** (`lhall10@asu.edu`), 730 E McKellips Rd. Apartment C-326, Tempe, AZ 85281. *The Union of Frame Theoretic and Gegenbauer Reprojection Techniques to Improve Image Construction Rates.* Preliminary report.

In many image reconstruction processes, data are collected in the frequency domain. Constraints on the procedure, especially time and patient behavior, lead to image data that is both finite and nonuniformly spaced, which together lead to poor reconstruction by conventional uniform methods. Furthermore, the recovered image experiences the Gibbs Phenomenon, which descrives the tendency of a Fourier Series to diverge at discontinuities and converge only slowly elsewhere. Separately, successful methods have been developed either to rectify the series expansion process, or to construct a series which provides faster convergence rates. Joining these processes appears to be a straigntforward approach to quickly recover images from the collected data, however there are open questions regarding these transformations and how they behave analytically. These questions are the subject of this research. (Received September 17, 2014)