



Farhad Jafari (fjafari@uwyo.edu) Department of Mathematics, University of Wyoming, Laramie, WY 82071-3036, USA, *On function spaces for best approximation of functions from non-uniform sampling.*

ABSTRACT. The well-known Shannon sampling theorem provides a beautiful reconstruction of band-limited images from uniform samples of its Fourier transform. In many situations, uniform sampling of the Fourier transform is not possible or desirable. Therefore, one may ask how one may reconstruct the image from a pre-specified set of samples of the Fourier transform and/or other transform of the function? In this talk, we will show how to construct reproducing kernel Hilbert spaces (RKHS) whose bases form the best possible atoms for reconstruction of images from the sampled data. This construction is then generalized and cast in an operator setting where the RKHS are directly related to the operators. Specific inversion formulae are described in particular cases.