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Nashville, TN 37240. *Sampling and reconstruction in shift invariant spaces in presence of noise.*

In the sampling problem, the objective is to reconstruct a function f on \mathbf{R}^d from its samples $\{f(x_j) : x_j \in X\}$ known on a set $X = \{x_j : j \in J\}$. If the function f belongs to a known shift invariant space, then there are several algorithms for performing such a reconstruction. In this talk, we present several theorems describing what happens to the reconstruction when the assumptions used for the algorithms do not hold, e.g., when the measurements consist of $\{f(x_j) + \eta(x_j) : x_j \in X\}$ where $\eta(x_j)$ is noise, or when the assumptions about the shift invariant space are erroneous. (Received September 27, 2000)