983-47-795 **A Aldroubi**, Dept. of Mathematics, Vanderbilt University, Nashville, TN 37240, and **Armando Rodado*** (Rodado@math.vanderbilt.edu), Dept. of Mathematics, Vanderbilt Univeristy, Nashville, TN 27240. *Non Uniform Sampling and Reconstruction in Irregular Spaces.* Preliminary report.

We discuss techniques for nonuniform sampling and reconstruction of functions in spaces that are generated by irregular translates of a set of generators, e.g., span$\{\phi(x-\lambda_k) : \lambda_k \in \mathbb{R}\}$, where $\{\lambda_k : k \in \mathbb{Z}\}$ are not necessarily regularly spaced. We extend some results of non-uniform sampling in shift invariant spaces to the case of irregular spaces and find algorithms for reconstructing a function f from its samples $\{f(x_j) : x_j \in \mathbb{R}, j \in \mathbb{Z}\}$. The following aspects will be considered: a) What properties of the space generators and the set of knots $\{\lambda_k\}$ make the non-uniform sampling problem meaningful. b) What properties on the sampling set $\{x_j : j \in \mathbb{Z}\}$ is needed to recover any function in the given space. (Received September 24, 2002)