983-42-700 **Eugenio Hernandez** and **Demetrio Labate*** (`dlabate@math.wustl.edu`), Department of Mathematics, PO Box 1146, Washington University, St.Louis, MO 63146, and **Guido Weiss**. *A unified theory of reproducing function systems.*

By a **reproducing method** for a Hilbert space $\mathcal{H}$ we mean the use of two countable families $\{e_j : j \in J\}$, $\{f_j : j \in J\}$, in $\mathcal{H}$, so that $h = \sum_{j \in J} < h, e_j > f_j$ for any $h \in \mathcal{H}$.

A variety of such systems have been used successfully in both pure and applied mathematics. They have the following feature in common: they are generated by a finite collection of functions by applying to the generators an appropriate set of dilations, modulations, and translations. The **Gabor systems**, for example, involve a countable collection of modulations and translations; the **affine systems** (that produce a variety of wavelets) involve translations and dilations.

Considerable amount of research has been conducted in order to characterize those generators of such systems. In this talk we present an approach that unifies all of these characterizations by means of a relatively simple system of equalities. One of the novelties here is that our approach provides us with a considerably more general class of such reproducing systems. For example, in the affine case, we need not to restrict the dilation matrices to ones that preserve the integer lattice and are expanding on R^n. (Received September 20, 2002)