1030-42-309 **Guido Weiss***, Mathematics Department, Washington University, Box 1146, St. Louis, MO 63130, and **Hrvoje Sikic**. *Independence and redundancy of integer translates of a square integrable function on the reals.*

An important class of subspaces in the theory of wavelets consists of the closed shift invariant subspaces [w] in L^2 (R) that are generated by w(.-k):k an integer. A special case is the one for which w(.-k) forms an orthonormal basis of [w]. Other generating systems, however, are important; for example, various types of frames. These last systems have a redundancy property that it is important to understand. The best known redundancy is linear dependence. If w is not the zero function, however, it is easily seen that w(.-k) is linearly independent. Thus, we are led to consider other types of independence and redundancy. For example, w(.-k) is minimal if, for each k, w(.-k) is not in the closure of the span of w(.-j):j not k; there are, also, notions of linear independence involving linear combinations with an infinite number of non-zero coefficients as well as various frames. The periodization function of w, defined to be the sum of the absolute value squared of the integral translates of w, p = p(w), expresses very efficiently these various notions. We show this to be the case and draw some important consequences for wavelet theory. (Received August 06, 2007)