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Akram Aldroubi* (akram.aldroubi@vanderbilt.edu), Dept. of Mathematics, Vanderbilt University, Nashville, TN 37240, and **Carlos Cabrelli, Christopher Heil, Keri Kornelson** and **Ursula Molter**. *Characterization of invariance in shift-invariance spaces.*

A shift-invariant space is a space of functions that is invariant under integer translations. Such spaces are often used as models for spaces of signals and images in mathematical and engineering applications. In this work we characterize those shift-invariant subspaces that are also invariant under additional (non-integer) translations. For the case of finitely generated spaces, these spaces are characterized in terms of the generators of the space. As a consequence, it is shown that principal shift-invariant spaces with a compactly supported generator cannot be invariant under any non-integer translations. (Received August 28, 2009)