

SUBSPACES WITH NORMALIZED TIGHT
FRAME WAVELETS IN \mathbb{R}

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Abstract

In this paper we investigate the subspaces of $L^2(\mathbb{R})$ which have normalized tight frame wavelets that are defined by set functions on some measurable subsets of \mathbb{R} called Bessel sets. We show that a subspace admitting such a normalized tight frame wavelet falls into a class of subspaces called reducing subspaces. We also consider the subspaces of $L^2(\mathbb{R})$ that are generated by a Bessel set E in a special way. We present some results concerning the relation between a Bessel set E and the corresponding subspace of $L^2(\mathbb{R})$ which either has a normalized tight frame wavelet defined by the set function on E or is generated by E .