Paluszyński, Maciej; **Šikić, Hrvoje**; **Weiss, Guido**; **Xiao, Shaoliang**
Tight frame wavelets, their dimension functions, MRA tight frame wavelets and connectivity properties. (English) Zbl 1018.42020
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This is a continuation of the study of generalized low pass filters and MRA frame wavelets initiated by the authors in [J. Geom. Anal. 11, 311-342 (2001; Zbl 0985.42020)]. This first paper focused on the construction of such functions. Here, the authors are particularly interested in the role played by the dimension function. In particular, they characterize all semi–orthogonal Tight Frame Wavelets (TFW) by showing that they correspond precisely to those for which the dimension function is nonnegative and integer valued. They also show that a TFW arises from their MRA construction if and only if the dimension of a particular linear space is either zero or one, and present several examples. In addition, the authors study the class of *MSF tight frame wavelets*, which are those TFWs ψ for which $|\widehat{\psi}|$ attains only the values 0 and 1, and obtain a result concerning their connectivity.

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