Hrvoje Šikić* (hsikic@math.hr), Department of Mathematics, University of Zagreb, Bijenicka 30, 10 000 Zagreb, Croatia, Darrin M. Speegle (speegled@slu.edu), Department of Mathematics, St. Louis University, St. Louis, MO, and Guido L. Weiss (guido@math.wustl.edu), Department of Mathematics, Washington University, St. Louis, MO. The structure of the set of Parseval frame wavelets.

We consider the set of all singly generated one-dimensional Parseval frame wavelets (PFW-s for short); that is, normalized (frame bounds one) tight frames generated by dilations and translations from a single function. Although this is the simplest case among the various reproducing function systems recently studied by many authors, even in this case more than a dozen potentially interesting subclasses have been identified. However, in many cases there were no known examples of PFW-s belonging to these classes, and the underlying structure was often unknown. We fill this gap to a large extent, by providing complete characterizations of various subclasses, and by constructing numerous examples of corresponding PFW-s (some of them being highly non-trivial). Special emphasis is given to the class of MRA PFW-s and its relationship to the class of semiorthogonal PFW-s. (Received September 12, 2005)