Wavelets on intervals derived from arbitrary compactly supported biorthogonal multiwavelets

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The construction of multiwavelets on a bounded interval, which can preserve most of their original properties on the real line, is fundamental in theory and applications (e.g., images and numerical PDEs). Except for a few concrete examples, no systematic construction method for multiwavelets on a bounded interval is available. Hence, given any compactly supported biorthogonal multiwavelet on the real line, we present a direct approach, to construct all possible locally supported biorthogonal multiwavelets on [0,1] satisfying prescribed vanishing moments, polynomial reproduction, and homogeneous boundary conditions. It neither explicitly involves dual refinable functions nor dual multiwavelets. For the sake of illustration, some examples of orthogonal and biorthogonal multiwavelets constructed on [0,1] will be given.

Joint work with: Bin Han.

References

[1] B. Han and M. Michelle, Wavelets on intervals derived from arbitrary compactly supported biorthogonal multiwavelets. *Appl. Comp. Harmon. Anal.* **53** (2021), 270-331.