

1014-42-160

Xiaoping Shen* (shen@math.ohiou.edu), Department of Mathematics, Ohio University, Athens, OH 45701. *Prolate spheroidal wavelets in a periodic setting*. Preliminary report.

Constructed by the periodization of the first prolate spheroidal wave function (PSWF), the periodic prolate spheroidal wavelets (periodic PS wavelets) possess many desirable properties lacking in other periodic wavelets. We discuss these properties and show that they have a representation in terms of the interpolation with the modified Dirichlet kernel. We then derive a group of formulas of interpolation type based on this representation. These enable one to obtain a simple procedure for the calculation of the periodic PS wavelets. Finally, we discuss the computational matters and provide numerical examples to illustrate the usage of these interpolation formulas. (Received August 03, 2005)