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Xianfeng (Janice) Hu* (hxf0204@gmail.com), **Mark Iwen** and **Hyejin Kim**. *Rapidly Computing Sparse Legendre Coefficient Expansions via Sparse Fourier Transforms.*

Algorithms for recovering functions with sparse Chebyshev or Legendre expansions will be discussed. In both situations, SFT techniques can be used to "automatically" generate new sublinear-time interpolation methods for these Fourier-related orthonormal bases by sampling with respect to a relatively simple change of variables (as opposed to subsampling from a uniform grid). We will present these sampling transformations as well as some initial theoretical and numerical results. (Received January 02, 2015)