

Sparse Representation of Bandlimited Functions Using Properties of Toeplitz Matrices: Solved and Open Problems

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Eigenpolynomials of Toeplitz matrices generated by characteristic functions are discrete prolate spheroidal wave functions and have a couple of interesting properties. Such properties can be used for the sparse approximation of bandlimited functions by complex exponentials. This talk gives an introduction into the topic based on [1] and [2] and poses open questions.

References

- [1] D. Slepian, Prolate spheroidal wave functions, Fourier analysis and uncertainty - V: the discrete case. *The Bell Syst. Techn. J.* 57, 1371 - 1430, 1978.
- [2] G. Beylkin and L. Monzon, On generalized Gaussian quadratures for exponentials and their applications. *ACHA* 12, 332-373, 2002.