Analytic Bezout Equations and Sampling in Rectangular and Radial Coordinates

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Abstract

Multichannel deconvolution was developed by C. A. Berenstein *et al.* as a technique for circumventing the inherent ill-posedness in recovering information from linear translation invariant (LTI) systems. It allows for complete recovery by linking together multiple LTI systems in a manner similar to Bezout equations from number theory. Solutions to these *analytic Bezout equations* associated with certain multichannel deconvolution problems are interpolation problems on unions of *coprime* lattices in both rectangular and radial domains. These solutions provide insight into how one can develop general sampling schemes on such sets. We give solutions to deconvolution problems via complex interpolation theory. We then give specific examples of coprime lattices in both rectangular and radial domains, and use generalizations of B. Ya. Levin's sine-type functions to develop sampling formulae on these sets.