

Signal noise reduction via the cumulative spectral density

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We first present the algebraic properties of a particular set of partial sums of vectors in R^n . We then show its isomorphism to a matrix subspace of dimension $n(n+1)/2$. Finally, from the explicit algebraic eigen decomposition of the matrices, we define a norm which we use to develop a very fast signal processing algorithm. Some numerical examples based on the Raman spectra of crystals complete the presentation.

Keywords: Matrix space, noise reduction, algorithm.