



Non-commutative tomography: A tool for data analysis and signal processing

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Tomograms, a generalization of the Radon transform to arbitrary pairs of non-commuting operators, are positive bilinear transforms with a rigorous probabilistic interpretation which provide a full characterization of the signal and are robust in the presence of noise. We provide an explicit construction of tomogram transforms for many pairs of noncommuting operators in one and two dimensions and illustrations of their use for denoising, detection of small signals and component separation.

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