Non-parametric regularization of tomographic problems

The purpose of the talk is to present an approach of tomographic inverse problems based on regularization by covariance type norm in a stochastic framework. By using Bochner's characterization of definite positive functions, some useful classes of covariance kernels can be displayed, and I will indicate how to assign values to the regularization parameters through L-curve analysis. I will also give insights on the resolution and uncertainty analysis.

Finally the approach will be illustrated by synthetic examples of 2-D tomography through ray analysis, and by the example of inferring spatial distribution of interstellar dust from opacity data in Astrophysics.

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Classification de Session: Tomographic reconstruction methods

Classification de thématique: Inverse problem in Appplied Mathematics