FRACTIONAL DISTANCE MATRICES FOR SCATTERED DATA MODELLING BY RANDOM GAUSSIAN FIELDS

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Spatial data observed on the d-dimensional Euclidean space are frequently modeled as realizations of homogeneous and isotropic random fields (see [1], [2]). The article focuses on geometry of Fractional Euclidean Distance Matrices (FEDM) and their application to the development of a probabilistic model of a Gaussian field. The resulting model is rather simple and depends only on the mean and variance parameters, efficiently estimated by the maximal likelihood approach. The model developed allows us to represent the information obtained from any number of measurements of the objective function obtained computing in a computational code or physical experiment and apply for solving practical kriging and extrapolation tasks with scattered data in computer graphics, experimental design, etc.

References