

Title: On the consistency of the inversion-free estimation of Gaussian random fields for irregularly spaced spatial data

Gaussian random fields are powerful tools for modeling the environmental processes. For large sample size, the classical approaches for estimating the parameters of covariance function require challenging and time consuming computations, such as evaluation of the Cholesky factorization or solving linear systems with the dense covariance matrix. Recently, Anitescu et al. proposed a fast and scalable algorithm which does not need such burdensome computations. The main focus of my talk is to investigate the increasing domain asymptotic behavior of Anitescu's algorithm for perturbed regular grids. Consistency, minimax optimality and asymptotic normality of this algorithm are proved under mild differentiability conditions on the covariance function. The numerical studies gauge the efficiency of the algorithm for large data sets.