



Minisymposium 6 - Positive definite functions and applications

Fast and Exact Simulation of Large Gaussian Lattice Systems

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The circulant embedding technique allows for the fast and exact simulation of stationary and intrinsically stationary Gaussian random fields. The method uses periodic embeddings and relies on the fast Fourier transform. However, exact simulations require that the periodic embedding is nonnegative definite, which is frequently not the case for two-dimensional simulations.

Here we consider a suggestion by Michael Stein, who proposed nonnegative definite periodic embeddings based on suitably modified, compactly supported covariance functions. Theoretical support to this proposal and software for its implementation are presented.