

Talk: Fast Iterative Methods for Solving Fractional Diffusion Equations

Speaker: Prof. SUN Haiwei

Date: 10 November 2014 (Monday)

Time: 11:40 a.m. - 12:20 p.m.

Abstract:

The fractional diffusion equation is discretized by the implicit finite difference scheme with the shifted Grunwald formula. The scheme is unconditionally stable and the coefficient matrix possesses the Toeplitz-like structure.

Several fast iterative methods are proposed to solve the resulting systems. Meanwhile, the fast Toeplitz matrix-vector multiplication is utilized to lower the computational cost with only $O(N\log N)$ complexity, where N is the number of grid points.

Numerical experiments are given to demonstrate the efficiency of the proposed methods. This talk includes papers which are joint works with H. Pang, S. Lei, J. Pan, R. Ke, and M. Ng.