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BUCAREST

Seminarul de Teoria Potentialului

Initial-Boundary Value Problem for the heat equation
A stochastic algorithm

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Abstract: The Initial-Boundary Value Problem for the heat equation is solved by using a new algorithm based on a random walk on heat balls. Even if it represents a sophisticated generalisation of the Walk on Spheres (WoS) algorithm, introduced to solve the Dirichlet problem for Laplace's equation, its implementation is rather easy. The definition of the random walk is based on a new mean value formula for the heat equation. The convergence results and different numerical examples permit to emphasize the efficiency and accuracy of our algorithm.