“Boundary integral solution of the time fractional diffusion equation”

Sarah–Lena Bonkhoff  TU Graz, Institut für Numerische Mathematik,
Steyrergasse 30, 8010 Graz, Austria

Abstract

In the last years fractional partial differential equations are gaining more and more interest since they are a useful approach for the description of recently investigated phenomena in physics. We consider the time fractional diffusion equation in a space-time cylinder with a time derivative of order $\alpha \in (0,1)$. For this purpose, fractional order derivatives are introduced and replace the first order time derivative of the standard diffusion equation. We can construct a fundamental solution and represent the solution of the time fractional diffusion equation in terms of layer potentials. This approach lead to boundary integral equations and we investigate the behaviour of the layer potentials in appropriate function spaces.