The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

Unconditional optimal error estimates of linearized L1-Galerkin FEMs for multi-dimensional time fractional Schrödinger equation

by

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Abstract

In this paper, a linearized L1-Galerkin finite element method is proposed to solve the multi-dimensional time fractional Schrödinger equation. We proved that the finite element approximations in L^2 norm and L^∞ is bounded independent of the temporal stepsize, based on the temporal-spatial error splitting argument. Then, optimal error estimates of the scheme are obtained without any temporal stepsize restriction, while the previous works on the fractional differential equations require the temporal stepsize conditions. Numerical examples on two and three dimensional time fractional Schrödinger equation are carried out to illustrate our theoretical results.

Date : 27 November, 2015 (Friday)
Time : 11a.m. – 12noon
Venue : TU801, The Hong Kong Polytechnic University

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