Adaptive Tensor Product Wavelet Method for Solving Singularly Perturbed Reaction-Diffusion Problem

Nabi Chegini
Department of Mathematics
Tafresh University, Tafresh, Iran
nabichegini@tafreshu.ac.ir

Abstract

In this talk, we construct locally supported biorthogonal wavelets on the unit interval that any second order PDE with constant coefficients is sparse. The representation of second order PDE on the hypercube with respect to the resulting tensor product wavelet coordinates is again sparse.
The adaptive tensor product wavelet method is applied for the numerical solution of a singularly perturbed reaction-diffusion model problem on the square**.** The numerical results indicate robustness with respect to the singular perturbations.