

Accepted Manuscript

Fast numerical solution for fractional diffusion equations by exponential quadrature rule

Lu Zhang, Hai-Wei Sun, Hong-Kui Pang

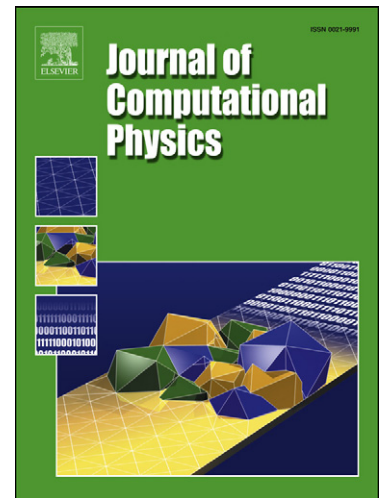
PII: S0021-9991(15)00441-6
DOI: <http://dx.doi.org/10.1016/j.jcp.2015.07.001>
Reference: YJCPH 5979

To appear in: *Journal of Computational Physics*

Received date: 27 October 2014
Revised date: 12 April 2015
Accepted date: 1 July 2015

Please cite this article in press as: L. Zhang et al., Fast numerical solution for fractional diffusion equations by exponential quadrature rule, *J. Comput. Phys.* (2015), <http://dx.doi.org/10.1016/j.jcp.2015.07.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Highlights

- The matrix of the spatial discretization of the fractional diffusion equation is Toeplitz-like.
- An exponential quadrature rule is employed to solve the system of ordinary differential equations.
- The Toeplitz-like matrix exponential is calculated by the shift-invert Arnoldi method.
- The coefficient matrix satisfies a condition that guarantees the fast approximation by the shift-invert Arnoldi method.
- Numerical results show the efficiency of the exponential quadrature rule.

Download English Version:

<https://daneshyari.com/en/article/6931069>

Download Persian Version:

<https://daneshyari.com/article/6931069>

[Daneshyari.com](https://daneshyari.com)