

Year: 2022

Vol.: 100

Fasc.: 3-4

Title: Multi-term time-fractional diffusion equation and system: mild solutions and critical exponents

Author(s): Aidyn Kassymov, Niyaz Tokmagambetov and Berikbol Torebek

The paper deals with a multi-term time-fractional semi-linear diffusion equation and system. Firstly, the existence of local mild solutions to the Cauchy problems for the multi-term time-fractional diffusion equation and system are proved. Also, we obtain Fujita-type and Escobedo–Herrero-type critical exponents for the multi-term time-fractional diffusion equation and system, respectively. It is shown that the nonexistence results of solutions depend on the order of the lowest derivatives of the multi-term time-fractional diffusion equation and system.

Address:

Aidyn Kassymov
Department of Mathematics: Analysis,
Logic and Discrete Mathematics
Ghent University
Belgium
and
Institute of Mathematics
and Mathematical Modeling
Almaty
Kazakhstan
and
Al-Farabi Kazakh National University
Almaty
Kazakhstan

Address:

Niyaz Tokmagambetov
Department of Mathematics: Analysis,
Logic and Discrete Mathematics
Ghent University
Belgium
and
Institute of Mathematics
and Mathematical Modeling
Almaty
Kazakhstan
and
Al-Farabi Kazakh National University
Almaty
Kazakhstan

Address:

Berikbol Torebek
Institute of Mathematics
and Mathematical Modeling
Almaty
Kazakhstan
and
Department of Mathematics: Analysis,
Logic and Discrete Mathematics
Ghent University