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Региональный математический центр  
SOUTHERN FEDERAL UNIVERSITY  
Regional Mathematical Center  
<https://rmc.sfedu.ru/>, Rostov-on-Don, Russia

## International scientific online seminar on Analysis, Differential Equations and Mathematical Physics

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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23 December 2021, 6 pm (UTC+3)

### Subordination principle for the space-time-fractional diffusion equations

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In this talk, a subordination principle for the solution operators to a family of the linear multi-dimensional space-time-fractional diffusion equations is addressed. These equations are obtained from the conventional diffusion equation by replacing the first order time-derivative by the Dzherbashyan-Caputo fractional derivative of order  $\beta$ ,  $0 < \beta \leq 1$  and the Laplace operator by the fractional Laplacian  $-(-\Delta)^{\frac{\alpha}{2}}$  with  $0 < \alpha \leq 2$ . First, a representation of the fundamental solutions to these equations is obtained in form of a Mellin-Barnes type integral. This representation is then employed for derivation of a subordination formula that connects the solution operator to the space-time-fractional diffusion equation with the orders  $\alpha$  and  $\beta$  of the fractional derivatives with the fundamental solution to the conventional diffusion equation.

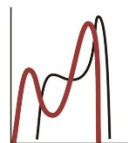
\*Seminar website: <https://msrn.sfedu.ru/sl>. The seminar uses Microsoft Teams online platform. Please send questions to [pichugina@sfedu.ru](mailto:pichugina@sfedu.ru) (Olga Pichugina, scientific secretary).

The seminar is organized by the Regional Mathematical Center of the Southern Federal University in collaboration with Institute of Mathematics, Mechanics and Computer Sciences of the Southern Federal University and the special Interest ISAAC-OTHA group in Operator Theory and Harmonic Analysis.

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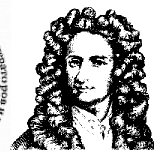
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