

Name of the project topic. Partial differential equations of fractional order in domains with varying boundaries and associated special integro-differential equations.

Project goal. Formulation and investigation of solvability questions for new boundary value problems for partial differential equations of fractional order in domains with changing boundaries. Study of the spectral issues related to the non-classical, special integral and integro-differential equations of Volterra.

Project Objectives.

Solution of boundary value problems for loaded and spectrally-loaded differential equations on time-varying manifolds.

Statement and study of boundary value problems for equations with fractional derivatives in infinite angular domains.

Study of boundary value problems for equations with the riemann-liouville fractional derivative in degenerating domains with time-varying boundaries.

Solution of singular volterra integral equations with strong singularities in the kernels.

Solution of special integro-differential equations.

Study of nonlocal boundary value problems in domains with arbitrarily varying boundaries.

Solution of boundary value problems with inverse time.

Solving linear problems for third-order pseudoparabolic equations with nonlocal boundary conditions.

Analysis and solution of nonlinear problems for third-order pseudoparabolic equations with nonlocal boundary conditions.

Model problems of nonlinear third-order equations.

Boundary value problems for parabolic equations with a load specified on a changing manifold in the form of fractional derivatives of various types.

Statement and study of boundary value problems for a two-dimensional fractionally loaded heat conduction equation.

Research group and project management

Table 1 – Composition of the research group for conducting scientific research, including foreign scientists, young scientists (postdoctoral, doctoral, master's and bachelor's degree students)

No. in sequence	Full name (if available), education, degree, academic title	Hirsch index, ResearcherID, ORCID, Scopus Author ID (if available)
1	Ramazanov Murat Ibraevich, higher, Doctor of Physical and Mathematical Sciences, Professor	h-index 10 (Web of Science); h-index 10 (Scopus); Researcher ID U-8583-2018; ORCID 0000-0002-2297-5488; Scopus Author ID 13906494700
2	Pskhu Arsen Vladimirovich,	h-index 10 (Web of Science);

	higher, Doctor of Physical and Mathematical Sciences	h-index 10 (Scopus); Researcher ID C-1819-2014; ORCID 0000-0002-0506-3516 ; Scopus Author ID 6602625208
3	Jenaliyev Muvasharkhan Tanabaevich, higher, Doctor of Physical and Mathematical Sciences, Professor	h-index 10 (Web of Science); h-index 10 (Scopus); Researcher ID AAN-7571-2020; ORCID 0000-0001-8743-7026 ; Scopus Author ID 55948103100
4	Orumbayeva Nurgul Tumarbekovna, higher, candidate of physical and mathematical sciences, associated professor	h-index 6 (Web of Science); h-index 7 (Scopus); Researcher ID AAC-6441-2020; ORCID 0000-0003-1714-6850; Scopus Author ID 57192194581
5	Kosmakova Minzilya Timerbaevna, PhD, associate professor	h-index 8 (Web of Science); h-index 8 (Scopus); Researcher ID AAN-8009-2020; ORCID 0000-0003-4070-0215; Scopus Author ID 56368167200
6	Tokmagambetova Tengesh Duysenbaykyzy, higher, PhD	h-index 2 (Web of Science); h-index 2 (Scopus); Researcher ID AFW-4830-2022; ORCID 0000-0003-1984-8485; Scopus Author ID 57558652800
7	Gulmanov Nurtai Kudaibergenovich, higher, PhD	h-index 2 (Web of Science); h-index 2 (Scopus); Researcher ID AAZ-3952-2020; ORCID 0000-0002-4159-1551; Scopus Author ID 57301712200
8	Omarov Madi Tulegenovich, higher, master	Researcher ID HKR-3480-2023; ORCID 0000-0002-9026-5912; Scopus Author ID 58082233500

List of published works by the performers of the theme:

1 Ramazanov M.I., Pskhu A.V., Omarov M.T. The first boundary value problem for the fractional diffusion equation in a degenerate angular domain // Bulletin of the Karaganda University. Mathematics series, No. 1(113), 2024, pp. 162–173. <https://doi.org/10.31489/2024M1/162-173>. (Scopus 46%)

2 Ramazanov M.I., Gulmanov N.K., Omarov M.T. Solving a singular integral equation of the Volterra type for heat conduction problems // Actual Problems of Applied Mathematics and Information Technologies - Al-Khwarizmi 2024: Abstracts /Tashkent, 2024. - P. 184-185.

3 Ramazanov M.I., Gulmanov N.K., Omarov M.T. On the Spectrum of a Particular Volterra Integral Equation // Evolution Equations, Approximation and Spectral Optimization: International Summer School & Conference. Book of Abstracts / Almaty, 2024. – P. 32-33.

4 Orumbayeva N., Manat A. On an approximate solution of a nonlocal boundary value problem for a third-order partial differential equation // Evolution Equations, Approximation and Spectral Optimization: International Summer School & Conference. Book of Abstracts / Almaty, 2024. – P. 29-30.

5 Орумбаева Н.Т., Манат А.М., Агатаева А.А. Об одном решении нелокальной краевой задачи длф нелинейного дифференциального уравнения в частных производных третьего порядка // Неклассические уравнения математической физики и их приложения: Тезисы докладов Международной научной конференции посвященной 90 летию со дня рождения академика Т.Д.Джураева /г. Ташкент, 2024. - С. 204.

6 Manat A.M., Orumbayeva N.T., Agataeva A.A. On the Solution of a nonlocal boundary value problems pseudoparabolic equation of the third order // Actual Problems of Applied Mathematics and Information Technologies - Al-Khwarizmi 2024: Abstracts /Tashkent, 2024. - P. 174.