Report

about the work of the dissertation council

Dissertation Council in the direction 8D054 - Mathematics and Statistics (6D060100 / 8D05401 - Mathematics) at the Abai Kazakh National Pedagogical University

1. Data on the number of meetings held 2 meetings were held in the dissertation.

Council at the Abai Kazakh National Pedagogical University in the direction 8D054 - Mathematics and Statistics (6D060100 / 8D05401 - Mathematics) in the reporting year (from 01.01.2023 to 31.12.2023).

2. Surnames, first name, patronymic (if any) of the members of the dissertation Council who attended less than half of the meetings.

There are no council members who have attended less than half of the meetings.

3. A list of doctoral students with an indication of the organization of training.

- Alimbekova Nurlana Baurzhanovna, Abai Kazakh National Pedagogical University;
- Bekenayeva Kymbat Slamovna, Abai Kazakh National Pedagogical University.

4. A brief analysis of the dissertations considered by the council during the reporting year, highlighting the following sections:

According to the dissertation of Alimbekova Nurlana Baurzhanovna:

1) analysis of the topics of the reviewed works;

Dissertation topic «Finite element methods for solving initial boundary value problems for fractional differential filtration equations».

Specialty: 6D060100- Mathematics

Scientific consultants:

Berdyshev Abdumaulen Suleimenovich - Doctor of physical and mathematical sciences, Professor, Abai Kazakh National Pedagogical University (Almaty, Kazakhstan);

Baishemirov Zharasbek Duysembekovich - PhD, Associate Professor, Abai Kazakh National Pedagogical University (Almaty, Kazakhstan);

Ruzhansky Michael Wladimirowitsch - PhD, Professor, Ghent University (Ghent, Belgium).

The defense took place on April 27, 2023 (10:00).

New and reliable results were obtained in the work:

– Stable finite element schemes were constructed for the numerical solution of the fractional differential problem of filtration in fractured porous media. The uniqueness of the solution and its continuous dependence on the input data and the convergence of finite element schemes are proven.

– Stable finite element schemes of higher order were constructed for the numerical solution of a nonlinear fractional differential filtration problem with a transition filtration law. The uniqueness of the solution and its continuous

dependence on the input data, the convergence of finite element schemes, the convergence of the iterative process are proven, and sufficient conditions for its quadratic convergence are obtained.

– Stable finite element schemes of higher order were constructed for the numerical solution of the fractional differential problem of filtration in fractured porous media under the assumption of the existence of two continua. The uniqueness of the solution and its continuous dependence on the input data and the convergence of finite element schemes are proven.

2) the connection of the subject of dissertations with the directions of science development, which were formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs;

"Just state. United Nation. Blessed society" address of the head of state Kassym-Jomart Tokayev to the people of Kazakhstan (September 1, 2022); Concept for the development of Information and communication technologies and the digital sphere (No. 961, December 30, 2021); The concept of education development of the Republic of Kazakhstan for 2022-2026 (No. 941, November 24, 2022); The Strategic Development Plan of the Republic of Kazakhstan until 2025 (No. 521, February 26, 2021).

3) analysis of the level of implementation of the results of dissertations in practice

The results of the presented work can serve as the basis for further research in this direction. For example, a natural continuation of the dissertation research is the study of multidimensional models of fluid flow in a fractured-porous medium with fractal geometry of cracks and models of multiphase fluid flow with spatial fractional derivatives.

Information on the dissertation of Bekenayeva Kymbat Slamovna:

1) analysis of the topics of the considered works:

The topic of the dissertation is «Solvability of initial boundary value problems for a fractional order pseudo-parabolic equation».

Educational program: «8D05401-Mathematics»

Scientific consultants:

Berdyshev Abdumauvlen Suleimanovich - Doctor of physical and mathematical sciences, Professor, Abai Kazakh National Pedagogical University (Almaty, Kazakhstan).

Aitzhanov Serik Ersultanovich - Candidate of physical and mathematical sciences, Associative Professor, al-Farabi Kazakh National University (Almaty, Kazakhstan).

Alberto Cabada Fernandez - PhD, Professor, University of Santiago de Compostela (Santiago de Compostela, Spain).

The defense took place on April 27, 2023 (14:00).

The paper obtained new and reliable results, such as:

– Theorems on the existence and uniqueness of a weak generalized solution to a problem with a linear boundary condition for a pseudoparabolic equation with the Caputo fractional derivative have been established and proven.

– The destruction of the solution to the problem in finite time has been proven.

– The asymptotic behavior of the solution in time was studied.

– Theorems on the existence and uniqueness of a weak solution to the problem with a nonlinear boundary condition for the pseudoparabolic Caputo fractional derivative equation were formulated and proven.

– The solvability of the initial boundary value problem for a loaded pseudoparabolic equation with the Caputo fractional derivative is proven.

2) the connection of the subject of dissertations with the directions of science development, which were formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs;

"Just state. United Nation. Blessed society" address of the head of state Kassym-Jomart Tokayev to the people of Kazakhstan (September 1, 2022); Concept for the development of Information and communication technologies and the digital sphere (No. 961, December 30, 2021); The concept of education development of the Republic of Kazakhstan for 2022-2026 (No. 941, November 24, 2022); The Strategic Development Plan of the Republic of Kazakhstan until 2025 (No. 521, February 26, 2021).

3) analysis of the level of implementation of the results of dissertations in practice

The results obtained can be useful in the future in the theory of studying quasilinear differential Sobolev equations with fractional integro-differentiation operators. Also, based on the achieved research results, it is possible to conduct computational experiments to obtain numerical values of solutions and construct their visualization.

5. Analysis of the work of official reviewers (with examples of the most substandard reviews).

Scientists who have made significant contributions in the field of historical science were appointed as reviewers. The reviewers analyzed the doctoral dissertation according to the assigned qualification.

Information on the dissertation of Alimbekova Nurlana Baurzhanovna:

Rysbaiuly Bolatbek - Doctor of physical and mathematical sciences, Professor, International University of Information Technology (Almaty, Kazakhstan);

Urmashev Baidaulet Amantaevich - Candidate of physical and mathematical sciences, Professor, Al-Farabi Kazakh National University (Almaty, Kazakhstan).

Information on the dissertation of Bekenayeva Kymbat Slamovna:

Ospanov Kordan Nauryzkhanovich - Doctor of Physical and Mathematical Sciences, Professor, L.N.Gumilev Eurasian National University (Astana, Kazakhstan) (specialty code 01.01.02);

Ramazanov Murat Ibraevich - Doctor of Physical and Mathematical Sciences, Professor, Karaganda University named after Academician E.A. Buketov (Karaganda, Kazakhstan) (specialty code 01.01.02).

6. Proposals for further improvement of the system of training scientific personnel.

- graduating departments that send dissertations for defense should pay special attention to the quality of research work and the documents necessary for defense.

7. The number of dissertations for the degrees of Doctor of Philosophy (PhD), doctor by profile in the context of specialties (areas of training):

	8D054 - Mathematics and Statistics (6D060100 / 8D05401 - **Mathematics**)
dissertations accepted for defense (including doctoral students from other universities);	2 (-)
dissertations withdrawn from consideration (including doctoral students from other universities);	-
dissertations that received negative reviews from reviewers (including doctoral students from other universities);	-
dissertations with a negative decision based on the results of the defense (including doctoral students from other universities);	-
dissertations aimed at revision (including doctoral students from other universities);	-
dissertations aimed at re-defense (including doctoral students from other universities).	-

Chairman dissertation council _____ **Berdyshev A.S.**
(signature, surname and initials)

Academic Secretary of the Dissertation Council _____ **Baishemirov Zh.D.**
(signature, surname and initials)

"29" December 2023