

Director: Altay Borubaev, doctor of physical-mathematical sciences, professor, Academician of the National Academy of Sciences of Kyrgyz Republic.

The mathematical investigations were begun at the republican Academy of Sciences in sixties. The Institute was founded on the base of mathematical and computer divisions of the Institute of Physics and Mathematics in 1984. In 2005, it was given the present name.

Now it consists of 6 laboratories and contains 34 research workers including 10 doctors and 14 candidates of sciences. The Institute is the leading body for mathematics in Kyrgyzstan, many researchers receiving scientific degrees within it are now engaged in science, education and administration both in the republic and abroad.

Main fields of research:

- Asymptotical and analytical methods in the theory of difference, differential, integro-differential and integral equations; The unified algorithm of constructing of asymptotical expansions of various kinds of singularly perturbed dynamical systems had been elaborated, the phenomena of rotating boundary layer and receding inner layer were discovered; the method of additional argument for investigation of new kinds of partial differential and integro-differential equations was proposed;
- Theory of ill-posed problems; the method of regularization by means of singular perturbations was developed;
- Wave and continuous mechanics; the limit representations for the second order partial derivatives of the wave potentials were obtained;
- Computer-assisted theorem proving; the new method of validating computations (obtaining strict results by means of approximate calculations) was developed and some new theorems in various branches of mathematics improving known results were proved;
- Interactive computer presentation of mathematical objects;
- Economical-mathematical methods.

Some publications in English:

1. Imanaliev M.I., Pankov P.S. The phenomenon of a rotating boundary layer in the theory of singularly perturbed systems of ordinary differential equations. Soviet Math. Dokl., vol. 34 (1987), no. 1.
2. Imanaliev M.I., Alekseenko S.N. On the theory of the systems of non-linear integro-parital differential equations of Whitham-type. Russian Academy of Sciences. Doklady, vol. 46 (1992), no. 6.
3. Imanaliev M.I., Alekseenko S.N. On the theory of non-linear equations with differential operator of type of total derivative with respect to time. Russian Academy of Sciences. Doklady, vol. 47 (1993), no. 5.
4. Imanaliev M.I., Pankov P.S. The phenomenon of a receding boundary layer in the theory of singularly perturbed systems of ordinary differential equations. Russian Academy of Sciences. Doklady. vol. 48 (1994), no. 3.
5. Pankov P.S. A combined method for proving certain theorems of mathematical analysis via a computer. Cybernetics, no. 3 (1978).
6. Pankov P.S., Dolmatov S.L. Substantiable evaluations by electronic computers and their application to one problem in combinatorial geometry. Information Processing Letters, vol. 8 (1979), no. 4.
7. Pankov P.S., Bayachorova B.J., Yugai S.A. Numerical theorem proving by electronic computers and its application in various branches of mathematics. Cybernetics, no. 6 (1982).

8. Pankov P.S., Bayachorova B.J. Using interval methods in cluster analysis and verified representation of connected sets. *Interval Computations (Moscow - Saint-Peterburg)*, no. 4 (6) (1992).

9. Pankov P.S., Bayachorova B.J. Using computers to perform non-Euclidean topological spaces. The 6-th Conference and Exhibition on Computer Graphics and Visualization "GRAPHICON-96". July 1-5, 1996. Saint-Petersburg, Russia. - Vol.2.

10. Borubaev A.A., Pankov P.S., Chekeev A.A. *Spaces Uniformed by Coverings*. - Hungarian-Kyrgyz Friendship Society, Budapest, 2003.

11. Pankov P.S., Bayachorova B.J., Juraev M. Mathematical Models for Independent Computer Presentation of Turkic Languages. In: *TWMS Journal of Pure and Applied Mathematics*, Volume 3, No.1, 2012.

12. Borubaev A.A. A lattice of compactifications of uniformly continuous mappings. In: *International Conference on Topology and its Applications*, Nafpaktos, Greece, 2018.

13. Kanetov B., Baigazieva N. Strong uniform paracompactness. In: *International Conference on Analysis and Applied Mathematics (ICAAM 2018)*, AIP Conference proceedings, Vol. no. 1997, American Institute of Physics. - 2018