

Name of scientific school: Generalized solutions of nonlinear integro-differential and difference equations

Scientific advisor: Professor of Algebra and Geometry Department, Dr. Sci. in Physics and Mathematics, Professor Evgeny Panov



Year of foundation of the scientific school: 2005

The staff of the scientific team: total number of members – 10, including doctors of sciences – 4, masters of sciences – 3

The main results of the team's work over the 2013 to 2016 period:

- Existence and uniqueness of almost periodic generalized entropic solutions of the Cauchy problem for quasilinear first-order equations is proved, the property of stabilizing solutions for large times is established;
- New variants of H-measures are developed; with their help the properties of strong precompactness of sequences of nonlinear elliptic-hyperbolic equation quasisolutions are established;

- Problem of conjugation of λ -holomorphic functions on the area boundary is investigated, applications to boundary value problems for elliptic systems in plane domains are given;
- Boundary properties of generalized Cauchy type integrals are studied;
- Generalized solutions of nonlinear equations arising in mathematical models of gas dynamics and hydrodynamics, problems of antenna analysis and synthesis, prediction, optimization and stability problems are investigated;
- Properties of stability of solutions of differential and difference equations of the biological population dynamic are studied;
- Numerical methods for solving integro-differential equations of electromagnetic waves diffraction on impedance surfaces of rotation are developed.

The most significant publications of the team over the 2013 to 2016 period:

- Nikolaev, V.G., Panov E.Yu. *Rezultaty o sovpadenii λ - i μ -golomorfnyh funkciy na granice oblasti i ih prilozheniya k jellipticheskim kraevym zadacham* [Results on the coincidence of λ - and μ -holomorphic functions on the domain boundary and their application to elliptic boundary-value problems] [Text] // Problems of Mathematical Analysis. - 2013. - Vol. 74. – pp.123-132.

Николаев, В.Г. Результаты о совпадении λ - и μ -голоморфных функций на границе области и их приложения к эллиптическим краевым задачам [Текст] / В.Г. Николаев, Е.Ю. Панов // Проблемы Математического Анализа. - 2013. - Вып. 74. – С.123-132.

- Sukacheva T.G., Matveeva O.P. *Zadacha Tejlora dlja modeli neszhimajemoj vjazkouprugoj zhidkosti nulevogo porjadka* [The Taylor's problem for the model of an incompressible viscoelastic zero order fluid] [Text] // Differential equations. - 2015. - T.51, No. 6. - P.771-779.

Сукачева, Т.Г. Задача Тейлора для модели несжимаемой вязкоупругой жидкости нулевого порядка [Текст] / Сукачева Т.Г., Матвеева О.П. // Дифференциальные уравнения. - 2015. - Т.51, № 6. – С.771-779.

- Panov, E.Yu. *Ob asimptotike pri bol'shih vremenah periodicheskikh obobshhennyh jentropijnyh reshenij skaljarnyh zakonov sohraneniya* [On asymptotics for large times

of periodic generalized entropy solutions of scalar conservation laws] [Text] // Mathematical notes. - 2016. - T.100, №1. - P.132-142.

Панов, Е.Ю. Об асимптотике при больших временах периодических обобщенных энтропийных решений скалярных законов сохранения [Текст] / Панов Е.Ю. // Математические заметки. - 2016. - Т.100, №1. – С.132–142.

– Panov, E.Yu. On the decay property for periodic renormalized solutions to scalar conservation laws [Текст] / Panov E.Yu. // J. Differential Equations. - 2016. - V.260, №3. – P.2704-2728.

– Eminov S.I., Eminova V.S. *Obosnovanie metoda Galerkina dlja gipersinguljarnyh uravnenij* [Substantiation of the Galerkin's method for hypersingular equations] [Text] // Journal of Computational Mathematics and Mathematical Physics. - 2016. - T.56, №3. - P.432-440.

Эминов, С.И. Обоснование метода Галеркина для гиперсингулярных уравнений [Текст] / Эминов С.И., Эминова В.С. // Журнал вычислительной математики и математической физики. - 2016. - Т.56, №3. – С.432-440.