Joseph Krasil'shchik—Dedication

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This volume is dedicated to the 60th birthday of Joseph¹ Krasil'shchik.

Iosif Semënovich Krasil'shchik was born on 10 February, 1948 in Moscow, USSR. He attended the school no. 52, one of the best Moscow high schools with specialization in Physics and Mathematics. The school had rich ties with the Moscow State University (MSU). After graduating the school with honors, in 1966 Krasil'shchik entered to the Department of Mechanics and Mathematics of MSU. At that time, a number of excellent mathematicians—Kolmogorov, Manin, Arnold, Novikov, Kurosh, Gelfand to name a few—lectured at the department. In the university Krasil'shchik specialized in geometry and topology under the supervision of A.M. Vinogradov. He graduated from the MSU in 1971.

Being an active member of Vinogradov's seminar, Krasil'shchik followed his mentor when the latter switched his scientific studies to applications of algebraic topology and differential geometry to differential equations. This area became the principal area of research for Krasil'shchik. He made an essential contribution to the field.

From the very first papers until now a subject of Krasil'shchik's constant interest is the algebraic aspects of differential calculus. His works in this field include Hamiltonian formalism in supercommutative algebras; algebraic study of differential equations; generalization of the δ -Poincaré lemma; algebraic theory of Frölicher-Nijenhuis, Richardson-Nijenhuis, and Schouten brackets.

Joseph Krasil'shchik is one of the principal founders of the nonlocal theory in geometry of differential equations. The central notion of this theory—a covering—is a key to decipher the structure of Bäcklund transformations, zero-curvature representations, Miura trans-

¹Another form: Iosif; in mathematical publications: I.S. Krasil'shchik.

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formation, recursion operators, nonlocal symmetries, conservation laws, and Hamiltonian structures, Estabrook-Wahlquist algebras, etc.

In 1972–1989 Krasil'shchik worked as a Researcher at the All-Union Institute for Scientific and Technology Information (USSR Academy of Sciences). There he obtained his Ph.D. degree in Information Science. Yet the institute loose discipline allowed finding time for studies in abstract mathematics. Krasil'shchik publications of that period dealt with Hamiltonian cohomologies of canonical algebras and nonlocal symmetries. These articles layed a foundation for his further research in the field.

From 1989 to 2003 Krasil'shchik worked at Moscow Institute for Municipal Economy, first as a senior lecturer and later as a professor. In 1997 he defended the Doctor of Science degree in Physics and Mathematics at the Moscow State University. In 1997 he also became a full professor at the Independent University of Moscow, where he is still working.

It was a period of a great scientific activity. The publications by Krasil'shchik treats such topics as cohomology background in geometry of PDE, deformations and integrable systems, Backlund transformations, the connection between integrability and supersymmetry, etc.

He was invited to short-time visiting positions at University of Tromsø (Norway), University of Twente (the Netherlands), Erwin Schrodinger Institute for Math. Physics (Austria), University of Seville (Spain), Universities of Florence, Salerno, Lecce (Italy), Universities of Lille, Angers (France), Bar-Ilan University (Israel) etc. He took part (as a plenary lecturer) in numerous conferences around the world; coauthored five monographs in a collaboration with A. Bocharov, V. Chetverikov, S. Duzhin, N. Khor'kova, P. Kersten, V. Lychagin, A. Samokhin, Yu. Torkhov, A. Verbovetsky, A. Vinogradov.

In 1990th Krasil'shchik began a long, fruitful collaboration with Paul Kersten from Twente University in Enschede, Holland. Together, they developed the theory of deformations of differential equations into a tool for computing major invariants of differential equations, such as recursion operators and Hamiltonian operators. Krasil'shchik's C -cohomology, Kersten's REDUCE package, and nonlocal theory all together boiled down to a beautiful geometric theory of recursion operators of PDEs, which was summarised in the monograph "Symmetries and recursion operators for classical and supersymmetric differential equations" (2000).

In 2004–2007 Krasil'shchik had a position of full professor at the Moscow State Technical University of Civil Aviation. Since 2007 he also holds professorship at the Russian State University for the Humanities. In this period Krasil'shchik's research concentrates mainly on Hamiltonian and symplectic structures, recursions, and hierarchies. The spectre of application includes KdV-mKdV system, dispersionless Boussinesq type equation, Monge-Ampère equation, supersymmetric KdV equation, Camassa-Holm equation etc. Overall, the list of his papers includes more than 70 items.

In recent years, Krasil'shchik undertook a project to extend these results to nonlocal Hamiltonian and symplectic operators. He carries out this project in collaboration, by now, with V. Golovko, S. Igonin, P. Kersten, A. Verbovetsky and R. Vitolo.

Krasil'shchik has a prominent place in the mathematical community. For many years he directs a specialized research seminar on the geometry of differential equations at the Independent University of Moscow. The seminar produces new ideas and results, attracts new students, creates national and international cooperation; it spreads the elevated spirit of a pure mathematical research at the times of collapsing mathematical education. Krasil'shchik

is a member of Moscow Mathematical Society and American Mathematical Society. He is an editor to eight volumes of collected works.

Outside mathematics he is a passionate fisherman. His other hobbies are extreme water tourism in wilderness of Siberia, Polar Urals etc, and also classical music and jazz. His family life is a source of lasting happiness.

We, friends and colleagues of Joseph Semenovitch Krasil'shchik, wish him good health, happiness and new trophies: in fishing and mathematics.