

Analytical and Numerical Methods in Differential Equations (Yanenko 105)

A virtual conference on occasion of the 105th birthday of
Academician Nikolai N. Yanenko

March 23-27, 2026

BOOK OF ABSTRACTS



Virtual Host:

School of Mathematics and Geoinformatics
Suranaree University of Technology
Nakhon Ratchasima, Thailand

The Riemann spaces related to the Navier-Stokes equations

V. S. Dryuma

¹*Institute of Mathematics and Computer Science, Kishinev, Moldova;
valdryum@gmail.com*

The properties of the Navier-Stokes system of equations are studied on the basis of the associated 14-dimensional Riemannian space D14 with a zero Ricci curvature tensor is equal to zero on the solutions of the system. The geometric characteristics of the space under consideration are determined by the relationships between the components of the Riemann curvature tensor, depending on the functions of velocity and pressure of the fluid, which are then used to construct examples of exact solutions for both laminar and turbulent flows. By studying in detail the properties of geodetic lines of the D14-space metric, the conditions for the compatibility of a system of NS equations are studied, which lead us to the systems of complex linear equations of the Schrodinger type. As an example, we consider the six and four –dimensional Riemannian metrics with a zero Ricci curvature tensor on solutions of the Kadomtsev-Petviashvili equation which integrated by the method of the inverse problem from soliton theory.