

**Monday, March 3, 2025**  
**from 4:45 p.m. to 6:20 p.m. (Moscow time)**  
**ZOOM ONLY**

**Vladislav A. Kibkalo**

*Integrable systems with non-compact foliations  
and results on their topological analysis*

The topological classification of integrable Hamiltonian systems, constructed and developed by A.T. Fomenko, his scientific school and co-authors, was applied to a wide class of mechanical and physical problems. An important assumption of many statements of the theory is the compactness of the fibers of the Liouville foliation. In systems with non-compact foliations, new effects arise: e.g. the flows of Hamiltonian vector fields can become incomplete, and the preimage of the bifurcation value does not necessarily contain critical points (in particular, it can be empty). In the first part of the talk, we will discuss several well-known systems with non-compact foliations, as well as the results obtained by various authors on their topological analysis and the problem of classification. We note here the review by A.T.Fomenko and D.A.Fedoseev on systems with non-compact foliations (2020, J. Math. Sc.).

Then we will move on to an important class of systems with such foliations – pseudo-Euclidean analogues of integrable mechanical systems (introduced by A.V.Borisov and I.S.Mamaev in 2016, Russ. J. Math. Phys). In writing quadratic first integrals and Casimir functions of such systems, in a number of cases, the pseudo-Euclidean (instead of the Euclidean one) scalar product of three-dimensional vectors is used. The speaker's results on the study of the topology of Liouville foliations of pseudo-Euclidean analogues of integrable tops and their generalizations, including the Zhukovsky system, will be presented. Some of the obtained results are joint with students: M.K.Altuev, N.A.Belousov, E.S.Yakimova (Agureeva).

**SCIENTIFIC SEMINAR**  
**“DIFFERENTIAL GEOMETRY AND APPLICATIONS”**

**headed by Academician of RAS Anatoly T. Fomenko**

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