

October 11, 2021

**Elena A. Kudryavtseva**

*Structural stability and symplectic classification  
for semilocal singularities of integrable systems*

An integrable Hamiltonian system with  $n$  degrees of freedom is given by  $n$  functionally independent functions pairwise in involution on a symplectic  $2n$ -manifold  $M$ . Consider the singular Lagrangian fibration on  $M$  whose fibres are connected components of the common level sets of the given functions. By a semilocal singularity, we mean the fibration germ at a singular fibre. In this talk, the following types of semilocal singularities are studied: nondegenerate singularities and cuspidal tori, which are the simplest degenerate semilocal singularities.

We give a (weak) sufficient condition for a semilocal singularity of a real-analytic integrable system to be structurally stable under real-analytic integrable perturbations. We also give a symplectic real-analytic classification of these singularities. As an illustration, we show that a saddle-saddle singularity of the Kovalevskaya top is structurally stable under real-analytic integrable perturbations, but structurally unstable under smooth integrable perturbations.

The talk is based on joint works of the author with Andrey A. Oshemkov (concerning nondegenerate singularities) and Nikolay N. Martynchuk (concerning cuspidal tori).

**SCIENTIFIC SEMINAR**

**“DIFFERENTIAL GEOMETRY AND APPLICATIONS”**

headed by Academician of RAS Anatoly T. Fomenko

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from 4:45 p.m. to 6:20 p.m. (Moscow time)

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