

# INTERNATIONAL BIWEEKLY ONLINE SEMINAR ON ANALYSIS, DIFFERENTIAL EQUATIONS AND MATHEMATICAL PHYSICS

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Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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7 March 2024, 6 pm (UTC+3)

## Semiclassical asymptotics on stratified manifolds

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We study the problem of semiclassical asymptotics for (pseudo)differential equations with singularities on a stratified manifold of a special form - the orbit space  $X$  of a smooth action of a compact Lie group  $G$  on a smooth manifold  $M$ . The operators under consideration are obtained as the restriction of  $G$ -invariant operators with smooth coefficients on  $M$  to the subspace of  $G$ -invariant functions, naturally identified with functions on  $X$ , and have singularities on strata of positive codimension. The asymptotics are associated with Lagrangian manifolds in the phase space defined by the Marsden-Weinstein symplectic reduction of the cotangent bundle  $T^*M$  under the action of  $G$ ; rapidly oscillating integrals defining the Maslov canonical operator on such manifolds contain exponentials as well as special functions associated with representations of  $G$ . For the simplest stratified manifold - a manifold with boundary obtained as the orbit space of a semi-free action of the group  $S^1$  on a closed manifold - the corresponding construction of semiclassical asymptotics was realized earlier. Note that in this case the class of equations under consideration on manifolds with boundary includes the linearized shallow water equations in a basin with a sloping beach. The talk deals with the general case.

\*Seminar website: <https://msrn.sfedu.ru/sl>. The seminar uses Microsoft Teams online platform. Please send questions to [ademp.seminar@gmail.com](mailto:ademp.seminar@gmail.com) (Tatiana Andreeva, scientific secretary).

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The seminar is organized by the coordinators Alexey Karapetyants and Vladislav Kravchenko within the activities of the Regional Mathematical Center of the Southern Federal University in collaboration with Institute of Mathematics, Mechanics and Computer Sciences of the Southern Federal University and the OTHA research group in Operator Theory and Harmonic Analysis.



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