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

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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9 March 2023, 6 pm (UTC+3)

On the sharp estimates for convolution operators with oscillatory kernel

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In this talk, we discuss the $L^p \mapsto L^{p'}$-boundedness problem for the convolution operator M_k (where k-means that the smooth amplitude function is homogeneous of order $-k$ for large values of the argument) with oscillatory kernel. We study the convolution operators, assuming that the characteristic surface $S \subset \mathbb{R}^3$ is contained in a sufficiently small neighborhood of a given point $x^0 \in S$ at which exactly one of the principal curvatures of S does not vanish. Such surfaces exhibit singularities of type A in the sense of Arnol'd's classification. Denoting by k_p the minimal exponent such that M_k is $L^p \mapsto L^{p'}$-bounded for $k > k_p$, we show that the number k_p depends on some discrete characteristics of the surface.

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

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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