

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

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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Gradient estimates for harmonic and generalized harmonic functions

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We study $h_{(\alpha,\beta)}^p$ classes of (α, β) harmonic functions in the unit disc, which are analogous to the classical Hardy spaces of harmonic functions. Specifically, we obtain sharp estimates of $Du(0)$ for $u \in h_{(\alpha,\beta)}^p$ in terms of the L^p norm of the boundary function. Asymptotically sharp estimates are obtained for $Du(z)$, as $|z| \rightarrow 1$, as well as for the higher order derivatives.

In the second part of the talk we investigate vertical derivative of a harmonic function in the upper half space, estimates are expressed in terms of the modulus of continuity of the boundary function.

*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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