



ЮЖНЫЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ
Региональный математический центр
SOUTHERN FEDERAL UNIVERSITY
Regional Mathematical Center
<https://rmc.sfedu.ru/>, Rostov-on-Don, Russia

International scientific online seminar on Analysis, Differential Equations and Mathematical Physics

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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25 November 2021, 6 pm (UTC+3)

On Hardy-Type Inequalities as an intellectual adventure for 100 years

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First of all I will present some of the prehistory until G.H. Hardy presented his famous inequality in 1925 (the discrete version was known already 1921). After that I will briefly mention some selected results in the dramatic further development as described e.g. in the books [1] and [3] and the Lecture Notes [2]. In particular, I have chosen to present an easy proof and its consequences, some situations when we can prove that the constants are sharp, alternative conditions (to the Muckenhoupt-Bradley condition) to characterize Hardy-type inequalities (indeed infinite many such conditions even so called scales of conditions) and similar results involving more general operators and function spaces (than weighted Lebesgue spaces). I will finish the lecture by presenting some Pers(son)ally chosen results after 2017 I judge have potential to be good starting points for the further development of this intellectual adventure for the next decennium and why not for the next sekel.

- [1] A.Kufner, L.E. Persson and N. Samko, Weighted Inequalities of Hardy type, World Scientific, Second edition, New Jersey-London-etc., 2017 (480 pages).
- [2] L.E. Persson, Lecture Notes, College de France, Pierre-Louis Lions' Seminar, November 2015 (48 pages).
- [3] C. Niculescu and L.E. Persson, Convex Functions and Their Applications, CMS Books in Mathematics, Springer, Second edition, 2018 (431 pages).

*Seminar website: <https://msrn.sfedu.ru/sl>. The seminar uses Microsoft Teams online platform.
Please send questions to pichugina@sfedu.ru (Olga Pichugina, scientific secretary).

The seminar is organized by 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 special Interest ISAAC-OTHA group in Operator Theory and Harmonic Analysis.

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