

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

---

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

[JOIN THE SEMINAR](#)

**11 January 2024, 6 pm (UTC+3)**

On the norm of the Riesz projection from  $L^\infty$  to  $L^p$

**Sergei Konyagin**, Lomonosov Moscow State University, Russia

[konyagin@mi-ras.ru](mailto:konyagin@mi-ras.ru)

We will consider  $2\pi$ -periodic functions of countably many variables. Let  $\mathbb{T} = \mathbb{R} / (2\pi \mathbb{Z})$  and  $\mu_\infty$  denote the Haar measure on  $\mathbb{T}^\infty$  normalized so that  $\mu_\infty(\mathbb{T}^\infty) = 1$ . Any function  $f \in L(\mathbb{T}^\infty)$  has the Fourier expansion

$$f \sim \sum_{\mathbf{k}} \hat{f}(\mathbf{k}) e^{i\mathbf{k}x},$$

where now the sum is taken over all  $\mathbf{k} = (k_1, k_2, \dots)$  with integers  $k_1, k_2, \dots$ , such that all these numbers but finitely many are equal to 0. We consider the Riesz operator  $R$  defined on the space  $L^2(\mathbb{T}^\infty)$ :

$$Rf \sim \sum_{k \geq 0} \hat{f}(\mathbf{k}) e^{i\mathbf{k}x}.$$

We prove that for any  $p > 2, q > 2$  the Riesz operator is not a bounded operator from  $L^p$  to  $L^q$ .

The talk is based on a joint paper with Herve Queffelec, Eero Saksman, and Kristian Seip.

\*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).

---

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.



Regional Mathematical Center  
<https://rmc.sfedu.ru/>



Institute of Mathematics, Mechanics  
and Computer Sciences  
<http://www.mmcs.sfedu.ru/>



OTHA research network in  
Operator Theory and Harmonic Analysis  
<http://msrn.sfedu.ru/>