Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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11 January 2024, 6 pm (UTC+3)

On the norm of the Riesz projection from L^∞ to L^p

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We will consider 2π-periodic functions of countably many variables. Let $\mathbb{T} = \mathbb{R} \,/\, (2\pi\,\mathbb{Z})$ and μ_∞ 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

$$f \sim \sum_k \hat{f}(\boldsymbol{k}) \, e^{ikx},$$

where now the sum is taken over all $\boldsymbol{k} = (k_1, k_2, \dots)$ 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 $L^2(\mathbb{T}^\infty)$:

$$Rf \sim \sum_{k \geq 0} \hat{f}(\boldsymbol{k}) \, e^{ikx}.$$

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 Queffélec, 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 (Tatiana Andreeva, scientific secretary).

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