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Title of the talk

On Sjölin–Soria–Antonov type extrapolation for locally compact groups and almost everywhere convergence of sequences of convolution operators

Abstract

A Sjölin–Soria–Antonov type extrapolation theorem for locally compact σ -compact non-discrete Hausdorff groups is proved.

Applying the extrapolation result it is shown that the Fourier series with respect to the Vilenkin orthonormal systems on the Vilenkin groups of bounded type converge almost everywhere for functions from the class $L \log^+ L \log^+ \log^+ \log^+ L$.

Another application deals with the halo conjecture in the theory of differentiation of integrals which states that if the maximal operator $M_{\mathbf{B}}$ corresponding to a translation invariant differentiation basis \mathbf{B} in a locally compact group is of restricted weak type φ , then the basis \mathbf{B} differentiates the integrals of functions from the class $\varphi(L)$. Namely, the result has been established that gives an approximation to the conjecture for functions $\varphi(u)$ close to u , while for the case of $\varphi(u) = u$, this implies the validity of the conjecture.

The results of the talk are published in the papers [1] and [2].

References

- [1] G. Oniani, *On Sjölin–Soria–Antonov type extrapolation for locally compact groups and a.e. convergence of Vilenkin–Fourier series*, *Acta Math. Hungar.*, Vol. 163, No. 2, pp. 429–436, 2021.
- [2] G. Oniani, *On the halo conjecture and maximal convolution operators for locally compact groups*, *Acta Math. Hungar.*, Vol. 165, No. 2, pp. 450–462, 2021.