Volosivets, S. S.; Kuznetsova, M. A.

Generalized p-adic Fourier transform and estimates of integral modulus of continuity in terms of this transform. (English) Zbl 1432.30033

p-Adic Numbers Ultrametric Anal. Appl. 10, No. 4, 312-321 (2018).

The authors introduce a class of complex-valued functions from $L^q(\mathbb{Q}_p^n)$, where $1 < q < \infty$, $\mathbb{Q}_p$ is the field of p-adic numbers, for which it is possible to define the Fourier transform belonging to $L^q(\mathbb{Q}_p^n)$. They prove equalities of Parseval type, an inversion formula and a sufficient condition for a function to be represented as this Fourier transform. They also give a sharp estimate of the $L^2(\mathbb{Q}_p^n)$-modulus of continuity in terms of the Fourier transform; the case $n = 1$ was considered by *S. S. Platonov* [p-Adic Numbers Ultrametric Anal. Appl. 9, No. 2, 158–164 (2017; Zbl 1409.11116)]. An L^q-generalization with $1 < q \leq 2$ is also obtained.

Reviewer: Anatoly N. Kochubei (Kyïv)

MSC:

30G06 Non-Archimedean function theory

11S80 Other analytic theory (analogues of beta and gamma functions, p-adic integration, etc.)

Cited in **1** Document

Keywords:

p-adic linear space; Fourier transform; modulus of continuity

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