

## ON A GENERALIZATION OF THE LIZORKIN THEOREM ON FOURIER MULTIPLIERS

L. O. SARYBEKOVA, T. V. TARARYKOVA AND N. T. TLEUKHANOVA

*Abstract.* A generalization of the Lizorkin theorem on Fourier multipliers is proved. The proofs are based on using the so-called net spaces and interpolation theorems. An example is given of a Fourier multiplier which satisfies the assumptions of the generalized theorem but does not satisfy the assumptions of the Lizorkin theorem.

*Mathematics subject classification (2010):* 42B15, 42B35.

*Keywords and phrases:* Fourier multipliers, Lizorkin theorem.

### REFERENCES

- [1] J. BERGH, J. LEFSTREM, *Interpolation spaces. An Introduction*, Springer-Verlag, Berlin Heidelberg New York, 1976.
- [2] G. H. HARDY, J. E. LITTLEWOOD, G. POLYA, *Inequalities*, Cambridge University Press, 1934.
- [3] P. I. LIZORKIN, *On multipliers of Fourier integrals in  $L_{p, \theta}$  spaces*, Trudy Matematicheskogo Instituta imeni V. A. Steklova, 1967, Vol. 139 (in Russian). English transl. in Proceeding of the Steklov institute of mathematics, 1967, Vol. 139.
- [4] E. D. NURSULTANOV, *Nikol'skii's inequality for different metrics and properties of the sequence of norms of the Fourier sums of a function in the Lorentz space*, Trudy Matematicheskogo Instituta imeni V. A. Steklova, 2006, Vol. 255, pp. 1970–215 (in Russian). English transl. in Proceeding of the Steklov institute of mathematics, 2006, Vol. 255.