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On the Divergence of Spectral Expansions of Elliptic Differential Operators

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ABSTRACT

In this paper we consider spectral expansions of functions from Nikol'skii classes $H_p^a(R^N)$, related to selfadjoint extensions of elliptic differential operators $A(D)$ of order m in R^N. We construct a continuous function from Nikol'skii class with $pa < N$, such that the Riesz means of spectral expansion of which diverge at the origin. This result demonstrates sharpness of the condition $pa > N$ obtained earlier by Alimov (1976) for uniform convergence of spectral expansions, related to elliptic differential operators.

Keywords: Fourier integral, spectral expansions of the differential operators, spectral function, Riesz means.