

1155-42-608

Bartosz Langowski* (balango@iu.edu), Indiana University, Department of Mathematics, 831 East 3rd St., Bloomington, IN 47405. *Spherical maximal function along thin subsets of integers.*

Let us define the sets of the form

$$\mathbb{N}_h = \{ \lfloor h(n) \rfloor : n \in \mathbb{N} \},$$

with the function

$$h(x) = x^c L(x),$$

where $L(x)$ is a suitable slowly varying function and $c \geq 1$, one can think that $L(x) = \log x$.

In our joint project with A. Iosevich, M. Mirek and T.Z. Szarek we study the variant of the spherical maximal function along \mathbb{N}_h . Let σ_N be a characteristic function of the sphere

$$\sigma_N = \chi_{\{(n_1, n_2, n_3) \in \mathbb{N}_{h_1} \times \mathbb{N}_{h_2} \times \mathbb{N}_{h_3} : n_1 + n_2 + n_3 = N\}}$$

and

$$r(N) = \#\{(n_1, n_2, n_3) \in \mathbb{N}_{h_1} \times \mathbb{N}_{h_2} \times \mathbb{N}_{h_3} : n_1 + n_2 + n_3 = N\}.$$

We define the maximal spherical operator

$$M_\star f(x) = \sup_{N \in \mathbb{N}} \left| \frac{\sigma_N}{r(N)} * f(x) \right|, \quad x \in \mathbb{Z}^3.$$

As our main result we obtain the estimate of the form

$$\|M_\star f\|_{\ell^p} \lesssim \|f\|_{\ell^p},$$

for the suitable range of p . (Received January 21, 2020)