ON THE AVERAGE NUMBER OF REPRESENTATIONS OF AN INTEGER AS A SUM OF LIKE PRIME POWERS

Abstract. We investigate the average number of representations of a positive integer as the sum of $k+1$ perfect k-th powers of primes considering only integers n belonging to a short interval $[N, N+H]$, say, where $H > 1$ is as small as possible. We extend recent results of Languasco and Zaccagnini [see [2] and [1]], which dealt with the case $k = 2$ and $k = 3$ respectively. We use the same technique to study the corresponding problem for sums of just k perfect k-th powers of primes and we also obtain "conditional" results assuming the validity of the Riemann Hypothesis (RH).

References

[1] A. Languasco and A. Zaccagnini. Sums of four prime cubes in short intervals. *arXiv preprint arXiv:1705.04457*, 2017.

[2] A. Languasco and A. Zaccagnini. Sums of one prime power and two squares of primes in short intervals. *arXiv preprint arXiv:1806.04934*, 2018.