

SUMMABILITY OF WEYL SUMS WITH KRONECKER SEQUENCES

BIANCA GARIBOLDI

ABSTRACT. If α is a vector in \mathbb{R}^d , $f(x)$ a continuous function on the torus \mathbb{T}^d and $\Phi(x)$ a suitable weight function, one can define the weighted discrepancy

$$\mathcal{D}_N^{\Phi, \alpha} f(x) = \left(\sum_{n=-\infty}^{+\infty} \Phi(N^{-1}n) \right)^{-1} \sum_{n=-\infty}^{+\infty} \Phi(N^{-1}n) f(x + n\alpha) - \int_{\mathbb{T}^d} f(y) dy.$$

We estimate the speed of pointwise convergence to zero of this discrepancy in two theorems that have different flavor. The first result, a metric one, provides an estimate of the speed of convergence in terms of the Fourier transform of the weights $\Phi(N^{-1}n)$ and the smoothness of the function $f(x)$ which holds for almost every α . In the second one, a deterministic result, the speed of convergence is also estimated in terms of the Diophantine properties of a given irrational vector $\alpha \in \mathbb{R}^d$.

It is a joint work with Leonardo Colzani and Alessandro Monguzzi.

DIPARTIMENTO DI INGEGNERIA GESTIONALE, DELL'INFORMAZIONE E DELLA PRODUZIONE, UNIVERSITÀ DEGLI STUDI DI BERGAMO, VIALE MARCONI 5, 24044 DALMINE (BG), ITALY
Email address: biancamaria.gariboldi@unibg.it