COMPLEX LAB 2023

ALESSANDRO MONGUZZI

ON THE SPEED OF CONVERGENCE IN THE ERGODIC THEOREM

It is known that no general statements can be made about the rate of convergence in Birkhoff's ergodic theorem. However, it is possible to obtain some results in specific settings. In this talk I will consider weighted sums of the form $\sum_n \Phi(N,n)f(x + n\alpha)$ and discuss their speed of convergence as $N \to \infty$ to the mean value $\int_{\mathbb{T}^d} f$. I will provide estimates for such speed of convergence in terms of the Diophantine properties of the irrational vector α, properties of the weight function Φ and the smoothness of the function f.

This talk is based on an ongoing investigation with N. Chalmoukis, L. Colzani and B. Gariboldi.