Multi-Dimensional Trigonometric Approximation and Irregularities of Point Distribution

Leonardo Colzani      Giacomo Gigante
Giancarlo Travaglini

Abstract

Given a positive constant $\alpha$, there exists a constant $c$ such that for every measurable set $\Omega$ in the Euclidean space and $R > 0$, there exist entire functions of exponential type $R$ with $A(x) \leq \chi_{\Omega}(x) \leq B(x)$ and $|B(x) - A(x)| \leq c(1 + R \text{dist}(x, \partial \Omega))^{-\alpha}$. Analogous results hold for the approximation by eigenfunctions of differential operators on manifolds. This leads to Erdős-Turán type estimates for discrepancy on manifolds.