



Seminario Rubio de Francia

Conferencia

por

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Título:

Simultaneous approximation via Laplacians on the Ball.

Abstract: In this work, we study the orthogonal structure on the unit ball \mathbf{B}^d of \mathbb{R}^d with respect to the Sobolev inner product

$$\begin{aligned} \langle f, g \rangle_{\Delta} &= \lambda \int_{\mathbf{S}^{d-1}} f(\xi)g(\xi)d\sigma(\xi) \\ &+ \int_{\mathbf{B}^d} \Delta[(1 - \|x\|^2)f(x)]\Delta[(1 - \|x\|^2)g(x)]dx, \quad \lambda > 0, \end{aligned}$$

where σ denotes the surface measure on the unit sphere \mathbf{S}^{d-1} , and Δ is the usual Laplacian operator. Our main contribution consists in the study of the approximation properties of the Fourier sums with respect to orthogonal polynomials associated with $\langle \cdot, \cdot \rangle_{\Delta}$. In particular, we estimate the error of simultaneous approximation of a function, its partial derivatives, and its Laplacian in the $L^2(\mathbf{B}^d)$ space.

Fecha: Jueves, 12 de Enero de 2023.

Hora: 12:00 horas.

Lugar: Seminario Rubio de Francia. Primera planta, Edificio B, Facultad de Ciencias.

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