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On Banach Spaces Whose Unit Sphere Determines Polynomials

Jesus Ferrer

Departamento de Analisis Matematico Facultad de Matematicas Universidad de Valencia Doctor Moliner,
50 46100 Burjasot (Valencia) SPAIN

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摘要

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Jesus Ferrer

Departamento de Analisis Matematico Facultad de Matematicas Universidad de Valencia Doctor Moliner,
50 46100 Burjasot (Valencia) SPAIN

Abstract In this paper we study the problem of characterizing the real Banach spaces whose unit sphere determines polynomials, i.e., if two polynomials coincide in the unit sphere, is this sufficient to guarantee that they are identical? We show that, in the frame of spaces with unconditional basis, non-reflexivity is a sufficient, although not necessary, condition for the above question to have an affirmative answer. We prove that the only L_p^n spaces having this property are those with p irrational, while the only L_p spaces which do not enjoy it are those with $p \in \mathbb{N}$. We also introduce a class of polynomial determining sets in any real Banach space.

Key words [unconditional basis](#) [polynomial determining property](#) [\$L_p\$ spaces](#)

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通讯作者 Jesus Ferrer jesus.ferrer@uv.es

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