UNIQUENESS OF ROTATION INVARIANT NORMS

J. ALAMINOS[1], J. EXTREMERA[2] AND A. R. VILLENA[3*]

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ABSTRACT. If $N \geq 2$, then there exist finitely many rotations of the sphere $\mathbb{S}^N$ such that the set of the corresponding rotation operators on $L^p(\mathbb{S}^N)$ determines the norm topology for $1 < p \leq \infty$. For $N = 1$ the situation is different: the norm topology of $L^2(\mathbb{S}^1)$ cannot be determined by the set of operators corresponding to the rotations by elements of any 'thin' set of rotations of $\mathbb{S}^1$.

[1,2,3] Departamento de Análisis Matemático. Facultad de Ciencias. Universidad de Granada. 18071 Granada, SPAIN

E-mail address: alaminos@ugr.es, jlizana@ugr.es, avillena@ugr.es