

Rotation invariant norms

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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 of that space for $1 < p < \infty$. For $N = 1$ the situation is different: for any N -set of \mathbb{T} the set of the corresponding rotation operators on $L^2(\mathbb{S}^1)$ does not determine the norm topology of that space.