

XX Encuentros de Análisis Real y Complejo  
Cartagena, 26-28 de mayo de 2022

## BALANCED FOURIER TRUNCATIONS IN GROUP VON NEUMANN ALGEBRAS

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ABSTRACT. In 2016, Naor introduced a refinement of the so-called *metric  $X_p$  inequalities*, a metric obstruction for embeddings of  $L_q$  into  $L_p$  whenever  $2 < q < p < \infty$ , via a fundamental inequality in the Hamming cube which strongly relies on Fourier analysis. In this talk, we will show that this latter result can be understood within the frame of noncommutative harmonic analysis and free probability, providing a general realization in the context of von Neumann algebras associated to discrete groups. This is joint work with Jose M. Conde-Alonso and Javier Parcet.

The content of this talk is part of Grant SEV-2015-0554-19-3 funded by MCIN/AEI/10.13039/501100011033. José M. Conde-Alonso was also supported by the Madrid Government Program V PRICIT Grant SII/PJI/2019-00514. All the authors were supported by the Spanish Grant PID2019-107914GB-I00 ‘Fronteras del Análisis Armónico’ (MCIN / PI J. Parcet) as well as Severo Ochoa Grant CEX2019-000904-S (ICMAT), funded by MCIN/AEI 10.13039/501100011033.

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