FUNCTIONAL ANALISYS SEMINAR

Departamento de Análisis Matemático

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Conference

Prof. Jorge Galindo Pastor

(Universitat Jaume I)

"Algebraic structure in the second dual of ideals of group algebras and related Banach algebras"

ABSTRACT: It is well-known that when the second dual $L^1(G)^{**}$ of the group algebra $L^1(G)$ of a locally compact group G is furnished with one of the Arens multiplications, the only elements p in $L^1(G)^{**}$ for which both multiplication operators $q \to pq$ and $q \to qp$ are continuous are the elements of $L^1(G)$. In short, $Z_t(L^1(G)^{**}) = L^1(G)$, the topological center of $L^1(G)^{**}$ is $L^1(G)$, i.e., it is as small as it gets. One says in this case that $L^1(G)$ is strongly Arens irregular. It is also known (at least, since Ülger's 2011 paper [*Characterizations of Riesz sets*] that infinite dimensional ideals of $L^1(G)$ can be Arens regular, i.e., that multiplication on their second duals can even be (separately) continuous. In this talk, we will discuss the Arens regularity properties of ideals of $L^1(G)$ with G compact and Abelian and will show that all sorts of behaviour are possible and actually occur. We will see that there is a correlation between these properties and the thinness of the subset of the dual group G' where the Fourier transforms of the elements of the ideal are supported. On our way, we will be stressing those aspects that can be replicated on a wide family of Banach algebras that include the algebra $L^1(G)$ for G compact (not necessarily Abelian) or the Fourier algebra A(G) with G amenable and discrete.

Date: **February 15th, 2023**

Place: Seminar 2 at IMAG-GR building

Time: 11:30 – 12:30

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EXCELENCIA MARÍA DE MAEZTU