



# Seminario Rubio de Francia

## Conferencia

por

**Abraham Rueda Zoca**

Universidad de Granada

Título:

*Isomorphic copies of  $c_0$  in the set of strongly norm-attaining mappings*

*Resumen:*

Let  $M$  be a complete metric space and let  $0 \in M$  be a distinguished point. We denote by  $\text{Lip}_0(M)$  the set of those Lipschitz functions from  $M$  to  $\mathbb{R}$  which vanish at 0. It is a Banach space when endowed with the following norm:

$$\|f\| := \sup_{x \neq y} \frac{|f(x) - f(y)|}{d(x, y)}.$$

We say that  $f \in \text{Lip}_0(M)$  strongly attains its norm if the previous supremum is actually a maximum, that is, if  $\|f\| = \frac{|f(x_0) - f(y_0)|}{d(x_0, y_0)}$  holds for some pair  $x_0 \neq y_0$ . We denote by  $\text{SNA}(M)$  to the set of all the strongly norm-attaining Lipschitz functions.

In the paper [2] it is addressed the question of when  $\text{SNA}(M)$  contains linear subspaces, where it is proved that this is always the case. As a consequence of their work, the authors posed in [2, Question 2] the natural question whether  $\text{SNA}(M)$  contains an isomorphic copy of  $c_0$  if  $M$  is infinite. In this talk we aim to prove, based on the work [1], that the answer of the previous question is affirmative.

The research was supported by MCIN/AEI/10.13039/501100011033: Grant PID2021-122126NB-C31, Junta de Andalucía: Grant FQM-018, by Fundación Séneca: ACyT Región de Murcia grant 21955/PI/22 and by Generalitat Valenciana project CIGE/2022/97.

[1] A. Avilés, G. Martínez-Cervantes, A. Rueda Zoca and P. Tradacete, *Infinite dimensional spaces in the set of strongly norm-attaining Lipschitz maps*, Rev. Mat. Iberoam. 40, 1 (2024), 189–200.

[2] V. Kadets and Ó. Roldán, *Closed linear spaces consisting of strongly norm attaining Lipschitz mappings*, Rev. R. Acad. Cienc. Exactas Fís. Nat. Ser. A Mat. RACSAM 116, no. 4 (2022), article no. 162, 12 pp.

Fecha: Jueves, 25 de abril de 2024.

Hora: 12:00 horas.

Lugar: Seminario Rubio de Francia. Primera planta, Edificio B, Facultad de Ciencias.

Web: <http://anamat.unizar.es/seminario.html>