

# SEMINARIO DE ANÁLISIS Y APLICACIONES

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11:30 h., ONLINE - URL: <https://conecta.csic.es/b/jos-ajp-qp4>

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### Nilspaces in ergodic theory and topological dynamics

#### Resumen:

The category of nilspaces was introduced around 2010 by Antolín Camarena and Szegedy. It was originally conceived as a tool in additive combinatorics, specifically for generalizations of Szemerédi's theorem. The strength of the concept lies in its remarkable structure theory: while by definition nilspaces are compact spaces  $X$  together with closed collections of "cubes"  $C^n(X) \subset X^{2^n}$ ,  $n = 1, 2, \dots$  verifying some topological axioms, under suitable assumptions a nilspace may be represented as an inverse limit of (smooth) nilmanifolds. In recent years some exciting applications of nilspaces have been found in topological dynamics (maximal nilfactors) and ergodic theory (convergence of multiple ergodic averages). In the talk we will discuss some of the key results in this direction. Based on joint works with Eli Glasner, Bingbing Liang, Zhengxing Lian, Freddie Manners, Péter Varjú and Xiangdong Ye.

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