

Centro de Investigação em Matemática e Aplicações  
Departamento de Matemática  
Programa de Doutoramento em Matemática

## Seminar

20/03/2024, CLAV 128, 14h30

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## On the richness of linear dynamics

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**Abstract:** Linear dynamics can be extremely simple or to exhibit a very complex behavior depending on the dimension of the space it acts on. Indeed, while the dynamics of linear maps on finite-dimensional vector spaces is entirely described by linear algebra, there exist a linear map on an infinite-dimensional Banach space which 'contains' all non-linear dynamical systems. In the first part of this talk I will first recall several examples of linear dynamics on finite dimensional spaces (relating them with the notions of hyperbolicity and subshifts of finite type) and the notion of weighted shifts on  $\ell_p$ -spaces (which are related to the so-called generalized hyperbolic linear operators). In the second part of the talk I will introduce a new family of linear maps - which extends the concept of weighted shifts - and discuss some conditions for such maps to display historic behavior and to satisfy the shadowing property. This is an ongoing project with M. Carvalho (U. Porto) and U. Darji (U. Louisville).

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