

# SEMINAR

## Grupo de Análise Funcional e Aplicações Functional Analysis and Applications Group

### Shift Operators

**Paulo Varandas**  
Universidade de Aveiro

#### Abstract

One of the central goals in dynamical systems theory is to describe the asymptotic behavior of a map or a flow, particularly in terms of its orbits. The situation becomes more tractable when the dynamical system is conjugate to a shift map

$$\sigma : \{0, 1\}^{\mathbb{N}} \rightarrow \{0, 1\}^{\mathbb{N}}, \quad \sigma(\omega_0, \omega_1, \omega_2, \dots) = (\omega_1, \omega_2, \omega_3, \dots)$$

which occurs, for instance, in the case of expanding interval maps and on the middle-third Cantor set. For this reason, shift spaces serve as a toy model for many dynamical systems, and their dynamical properties are by now well understood.

In this talk, I will discuss the role of shift dynamics in dynamical systems, as well as a new class of maps—denoted shift operators—that arise at the interface between dynamical systems and analysis. These operators act on certain Banach spaces of sequences and are defined by the coordinate-wise action of linear operators. They remain largely unexplored and provide a fertile playground for those interested in developing this line of research.

**Room Sousa Pinto**  
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