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Seminário

Grupo de Probabilidade e Estatística
Centro de Investigação em Matemática e Aplicações – CIDMA -

11 de fevereiro de 2026 14:00 Sala Sousa Pinto

Almost everything you always wanted to know about STATE SPACE MODELS (but were afraid to ask)

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Abstract

A very general model that subsumes a whole class of special cases of interest in much the same way that linear regression does is the state space model. Do you ever wonder why, when you fly to Porto you don't end up in Lisbon? The tracking devices use state space models to make sure your plane is on course. The model was proposed in the space tracking setting by where the state equation defines the motion equations for the position (state) of the vehicle and the data reflect information that can be observed from a tracking device. Although the model was employed in aerospace-related research, it has also been used in many disciplines such as AI, biology, economics, finance, and medicine, to mention a few.

I will first present the linear Gaussian state space models, establish some key ideas, and then move to various applications that show the generality of the model. As time permits, I will discuss some nonlinear applications.

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