



Seminar

Systems and Control Group - CIDMA

6 de dezembro de 2022, 14h00

Departamento de Matemática, Universidade de Aveiro
Sala Sousa Pinto

Existence Results for Fractional Differential Equations in Presence of Upper and Lower Solutions

Rim Bourguiba

Laboratory of Analysis, Probability and Fractals, University of Monastir, Tunisia
rym.bourguiba@fsm.rnu.tn

Abstract

We study some existence results for fractional differential equations subject to initial conditions. First, we focus on the linear problem and we give an explicit form for the solutions by reduction to an integral problem. We analyze some properties of the solutions to the linear problem in terms of its coefficients. Secondly, with the help of this theory, we study the nonlinear problem subject to initial value conditions using upper and lower solution methods.

Fractional optimal control: theory and applications.

Faiçal Ndairou

CIDMA, University of Aveiro
faical@ua.pt

Abstract

In this talk, I will present a derivation of Pontryagin Maximum Principle (PMP) for fractional optimal control problems involving distributed order fractional derivatives as well as fractional derivatives with a general analytic kernel. An analysis of a fractional mathematical model of COVID-19 transmission dynamics reflecting realities of Portugal, Spain will be also considered.

This seminar was supported in part by the Portuguese Foundation for Science and Technology (FCT – Fundação para a Ciência e a Tecnologia), through CIDMA - Center for Research and Development in Mathematics and Applications, within project UIDB/04106/2020