

# WORKING GROUPS PDE

DATE: WEDNESDAY, SEPTEMBER 21, STARTING FROM 12:00 <sup>1</sup>

**Usage of IPOPT and ADOL-C based tool for nonlinear problem solving**

**IRAITZ MONTALBAN**

Internship, BCAM

In BCAM we have developed a combined solution based on Ipopt nonlinear problem solving engine and ADOL-C automatic differentiation tool for easily solving large-scale nonlinear optimization problems. This solution is meant to be used for both industrial solution providing and user friendly tool for solving optimization problems one could have within their research. Introduction to both tools as well as usage and practical examples using developed solution will be explained.”

DATE: WEDNESDAY, SEPTEMBER 21, NOT BEFORE 12:30

**Mathematical and numerical aspects of some scalar conservation laws: application to control**

**ALEJANDRO POZO**

PhD Student, BCAM

In this work we collect the basic results on scalar conservation laws and some numerical methods for their computational simulation. Based on those tools, we analyze two examples of conservation laws. On the one hand, we study a control problem on the initial condition for the Burgers equation, with the aim of achieving a fixed solution in a given time. On the other, by using the characteristics-Galerkin method, we try to simulate some of the existing analytical results referring to the asymptotic behavior of a non linear convection-diffusion equation.

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<sup>1</sup>Each presentation will last about 30 minutes + further questions and discussions