

## ORAL COMMUNICATION (MATHEMATICS AND MEDICINE)

**Advances in Fluid Dynamics: Boundary Optimal Control for Navier-Stokes Equations**IRENE MARÍN GAYTE<sup>a</sup><sup>a</sup> Institution: Universidad Loyola Andalucía, Sevilla, SpainE-mail: [imgayte@uloyola.es](mailto:imgayte@uloyola.es)**Abstract**

Fluid control remains a complex and challenging area, especially in the context of simulating blood flow. This understanding is crucial for modeling and analyzing cardiovascular diseases such as arterial blockages and aneurysms. In this presentation, we will explore the results related to the optimal control of fluid governed by the Navier-Stokes equations. We address a boundary control problem for the evolutionary Navier-Stokes equations, focusing on mixed Dirichlet-Neumann boundary conditions, see [1, 2].

**References**

- [1] M. D. Gunzburger, S. Manservigi, “*The velocity tracking problem for Navier-Stokes flows with boundary control*”, SIAM J Control Optim 39, 2000, 594–634.
- [2] M. Hinze, K. Kunisch, “*Second order methods for boundary control of the instationary Navier-Stokes system*”, ZAMM-Journal of Applied Mathematics and Mechanics, Applied Mathematics and Mechanics, Vol. 84, no 3, 2004, pp. 171-187.