

**NUMERICAL MODELING TECHNIQUES FOR COMPLEX  
PROBLEMS IN SCIENCE AND ENGINEERING.  
(IN HONOR OF RAFAEL MONTENEGRO)**

**G. MONTERO<sup>\*</sup>, J.M. ESCOBAR<sup>\*</sup>**

<sup>\*</sup> University Institute for Intelligent Systems and Numerical Applications in Engineering,  
Universidad de Las Palmas de Gran Canaria  
Edificio Polivalente I, Campus Universitario de Tafira  
[gustavo.montero@ulpgc.es](mailto:gustavo.montero@ulpgc.es), [josem.escobar@ulpgc.es](mailto:josem.escobar@ulpgc.es), <https://www.siani.es>

**ABSTRACT**

This thematic session is dedicated to recent advances in numerical modeling applied to multiphysical and multiscale problems in different areas of science and engineering. It will address both the development of new methodologies—such as finite elements, finite volumes, boundary elements, and high-order HDG formulations—and their application to complex cases: incompressible flows, wave propagation, porous media simulation, atmospheric and marine pollution, solar and wind energy, and forest fire propagation, among others.

In addition to applications, contributions addressing key computational aspects such as load balancing in parallel algorithms, geometric accuracy in meshes, and the fidelity of numerical models will also be included. The aim of the session is to provide a multidisciplinary space for sharing theoretical, computational, and applied approaches that push the boundaries of numerical simulation in real and demanding contexts.