

1st Spanish HPC Combustion Workshop

The use of numerical simulations in the context of High-Performance Computing (HPC) as a tool for design and understanding modern combustion systems is becoming increasingly important in the last decade as more computing power is currently available. However, the modelling of combustion systems is very demanding in terms of physical models and algorithms, since it not only requires the modelling of combustion and turbulence, but also their interactions with additional phenomena such as atomization, vaporization, phase change, turbulent mixing and stirring. The interaction of the flame with the surroundings is also of crucial importance with influence on different aspects such as near wall behaviour, heat losses or fluid/structure interactions. Furthermore, combustion process usually involves large number of reacting species and radicals depending on the fuels leading to multiscale and multiphysics problems with large disparity of time and length scales. The enhancement of numerical methods and physical models over the last years has contributed to an improvement of the prediction capabilities, although many challenges are still to be faced such as flashback, thermoacoustic instabilities, partially premixing, stratified flows, among others. All aspects of combustion simulations inherently need large number of computing resources and this community is well known to be an important player in HPC-related activities worldwide.

The RES HPC combustion workshop is dedicated to getting together combustion researchers across the country, and share experiences and issues related to the modelling of combustion systems. In particular, the workshop has the following objectives:

- To share successful / unsuccessful experiences on combustion modelling
- To enable national collaborations
- To disseminate high-level research to invited industries
- To encourage the use of computing resources from the RES in the community

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