

# PROGRAMA INTERUNIVERSITARIO DE DOCTORADO EN TECNOLOGÍAS DE LA INFORMACIÓN



MENCIÓN HACIA  
LA EXCELENCIA

## MASTER EN COMPUTACIÓN DE ALTAS PRESTACIONES

# CONFERENCIA

### *Dealing with Applications on High-End Computing Systems*

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The development of simulation codes is often a costly process due to the increasing complexity of the problems to be solved and the evolution of computer architectures. Ideally, efforts to improve programmability and performance should not lead to disruption, yet code developers are usually faced with a range of choices for programming. For parallel computing, in particular, the choices include MPI, OpenMP, CUDA and Partitioned Global Address Space languages. On the other hand, the use of software libraries in simulation codes have continuously grown, lessening the development effort and contributing to an optimal usage of the available computational resources. This presentation will discuss libraries and tools for high end computing, together with applications that have tapped into their functionalities.

Osni A. Marques earned his Ph.D. in structural engineering at the Federal University of Rio de Janeiro, Brazil and now he is a Staff Scientist in the Computational Research Division of Lawrence Berkeley National Laboratory (LBNL). In the world of science, LBNL is synonymous with “excellence”. Thirteen scientists associated with it have won the Nobel Prize. Osni has worked on various aspects of high-end scientific computing, including eigenvalue solvers for applications in engineering, biochemistry, earth sciences and electronic structure calculations; algorithms for dense linear algebra calculations in the LAPACK and ScaLAPACK libraries; and tools to facilitate the development and performance portability of parallel codes.

