



Joint Inria-UPPA Teams

Cagire





The Inria CAGIRE project team (« Computational AGility for internal flows simulations and compaRisons with Experiments ») brings together since May 2016 researchers coming from different horizons and backgrounds (turbulence modelling, applied mathematics, experiment) who elaborated since 2011 a common vision of what should be the simulation tool of fluid dynamics of tomorrow. If not entirely application-driven, this project is based on the will for developing tools that could be useful in a way or another to the companies (big but also small !) that are active in the competitive fields of aviation/automotive propulsion and energy production. The targeted flows are (mostly) wall bounded and turbulent. As a consequence, they feature a multiplicity of time and scale fluctuations that renders their simulation extremely challenging. The team's motto is agility or equivalently a clever use of adaptativity in the developed simulation suite based on I) The capability of being run on any present or future new supercomputer in a way that fully benefits from the hardware evolution while limiting the painful and time consuming phase of machine adaptation by the recourse to an efficient runtime, ii) A high level of accuracy and robustness permitting the use on a large range of flow configurations: ranging from the generic lab scale geometry to that of a practical interest, iii) The capability of adapting on the fly the physical modelling by recourse to dynamic hybridization of the most relevant models of a given class with a focus on the turbulence modeling.

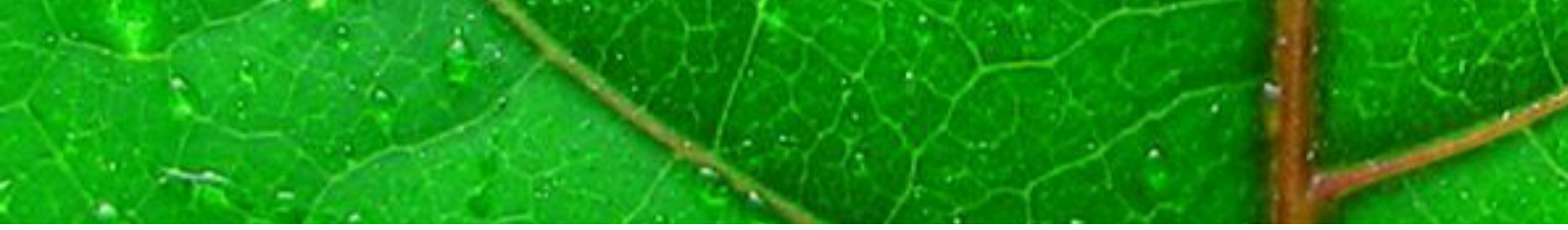
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Magique 3d

- 6 membres permanents,
- 2 post-docs,
- 2 ingénieurs,
- 8 doctorants,
- 12 thèses soutenues depuis 2007.



Magique-3D (Advance 3D Numerical Modelling in Geophysics) is a common team-project between Inria and LMAP, led by [Hélène Barucq](#) | . It was created in 2007, in order to apply recent advances in three-dimensional scientific computing to different areas in geophysics, and particular seismic wave propagation. First, advanced models have to be developed in order to take the complexity of underlying physical phenomena into account. Second, these models can be applied to realistic cases that require the solution of large systems, which in turn implies that numerical methods have to be optimized. The team developed a strong industrial partnership with Total, in the framework of the strategic action [DIP](#) | .



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