The “Modeling, experiments, simulation and HPC” team works on four main lines of research:

1. Discretization methods for PDE ................................................................. 1
2. Modeling of physical phenomena ................................................................. 1
3. Experiences ........................................................................................................ 1
4. Development of computing codes ................................................................. 1

* Finite element methods for quadrilaterals and hexahedrons
* Mixed and nonconforming finite element methods
* Discontinuous Galerkin methods
* Finite volume methods
* Stabilized finite volume methods
* Approximation and optimal gridding
* Time-adaptive methods
* Convergence of adaptive finite element methods

* Wave propagation, Maxwell equations
* Fluid mechanics, Navier-Stokes and Euler equations
* Ferromagnetic Materials
* Wave Guides

Experiences

* Test facility MAVERIC
* Turbulent flows
* Jet(s) in crossflow
* Acoustic forcing
* Particle image velocimetry (PIV)
* Laser Doppler velocimetry
* Laser Tomography

* Aero ; Résolution d’écoulements par des méthodes éléments finis d’ordre élevé
* **Gar6more** : analytical solutions for wave propagation in 2D
* **Gar6more** : analytical solutions for wave propagation in 3D
* **Hou1** : acoustic and elastic wave propagation simulations using Discontinuous Galerkin Method, in time- and in harmonic domains
* **Montjoie** : solution of Partial Differential Equations using high order finite element methods