Biographical Sketch

Marc MEDALE

Professor of Mechanical Engineering, Aix-Marseille University, Marseilles, France.

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Personal Data:

Date and place of Birth: November 17th, 1964, Toulouse (France) Citizenship: French

Education:

B. Tech	University of Toulouse, France	1986
M.S. Mech. Eng.	University of Technology of Compiègne, France	1990
Ph.D.	University of Technology of Compiègne, France	1994

Employment History:

- Professor, Aix-Marseille University 2003-present
- Assistant professor, Aix-Marseille University 1992-2003
- Teacher of Mechanics in French high school. 1987-1990

Teaching activities:

- Numerical modeling with the Finite element Method (Master class)
- Numerical modeling of instability problems (Master class)
- Thermo-mechanics of continuous media (Master class)
- Design in mechanics and industrial project management (Master class)

Outreach activities in education:

Coordination of an international and collaborative education program with the College of Engineering of the University of Iowa (Iowa City, Iowa, USA). This program aims at training students to take advantage of multicultural and international environment in major companies. It consists in working with mixed students teams (from both the University of Marseille and the University of Iowa) and developing a common industrial design project, using modern communication facilities as standard tools (video conferencing, etc).

Research Interests:

Numerical modeling of coupled heat and fluid flows, with a more particular emphasis on natural and mixed convection fluid flows. The developed models address both Newtonian and viscoplastic rheologies and they aim at computing branches of steady state solutions, detect bifurcation points if any by the means of algorithms based on the Asymptotic Numerical Method.

Publications:

- 48 published papers in international journals
- 3 chapters in collaborative books
- 46 communications in international conferences with proceedings

Some recent Journal Publications:

- O. Madani Fouatih, M. Medale, O. Imine, B. Imine, Design optimization of the aerodynamic passive flow control on NACA 4415 airfoil using vortex generators. European Journal of Mechanics B/Fluids, Vol. 56, pp. 82-96, 2016.
- F. Carle, S. Semenov, M. Medale and D. Brutin, Contribution of convective transport to evaporation of sessile droplets: Empirical model, International Journal of Thermal Sciences, Vol. 101, pp. 35-47, 2016.
- M. Medale and B. Cochelin, High performance computations of steady-state bifurcations in 3D incompressible fluid flows by Asymptotic Numerical Method, Journal of Computational Physics, Vol. 299, pp. 581-596, 2015.
- M. Medale and P. Cerisier, Influence of container shape and size on Surface-Tension-Driven Bénard Convection, Eur. Phys. J. Special Topics, Vol. 224, pp. 217–227, 2015.
- F. Berrahil, S. Benissaad, C. Abid and M. Medale, Natural convection with volumetric heat generation and external magnetic field in differentially heated enclosure, Journal of Mechanical Engineering Science, Vol. 228, pp 2711–2727, 2014.
- J. Chauchat and M. Medale, A three-dimensional numerical model for dense granular flows based on the $\mu(I)$ rheology, Journal of Computational Physics, Vol. 256, pp. 696–712, 2014.
- B. Cochelin and M. Medale, Power series analysis as a major breakthrough to improve the efficiency of Asymptotic Numerical Method in the vicinity of bifurcations, Journal of Computational Physics, Vol. 236, pp. 594-607, 2013.
- P. Aussillous, J. Chauchat, M. Paihla, M. Medale and E. Guazzelli. Investigation of the mobile granular layer in bedload transport by laminar shearing flows, J. Fluid Mech., Vol. 736, pp. 594-615, 2013.
- C. Mintsa Do Ango, M. Medale and C. Abid, Optimization of the design of a polymer flat plate solar collector, Solar Energy, Vol. 87, pp. 64-75, 2013.

Research funding received in last 5 years:

Approximately $200,000; FUI-14 (MUSICAS project), EDF R&D (research grants), etc.