Martin DAVID
Postdoctoral scholar (UPPA)
French qualification for the position of Assoc. Prof.

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ABOUT ME

Ph.D. in Engineering Sciences graduate with a passion for scientific research and teaching. Aspiring to pursue a career as a university lecturer and researcher, I consider myself as a social and respectful person, always dedicated to achieving collective success.

LANGUAGES

English: B2 (TOEIC 850)

Spanish: school level

COMPUTER KNOWLEDGE

Programming : MATLAB (7/10) Fortran (8/10), Visual Basic (8/10), Gnuplot (9/10)

CFD
- Code_Saturne (9/10)
- ANSYS Fluent (7/10)
- TrioCFD (9/10)
- Comsol (6/10)
- Fire Dynamics Simulator (5/10)

Visualization
- Paraview (9/10)
- VisIt (8/10)
- Tecplot360 (5/10)

Meshing
- GMSH (8/10)

Others
- WindPRO (8/10)
- OpenWind (7/10)

Date	Training - Education
2018-2021	PhD thesis at the PROMES – CNRS laboratory - *Perpignan* Simulation and modeling of flows in gas-pressurized solar receivers Ph.D. defense: 11/26/2021 - jury: DOR C.Castelain, Pr S.Vincent, EDOR G.Flamant, DOR J.Magnaudet, and Pr A.Bastide
2015-2018	Engineering school 'Ecole Nationale Supérieure en Génie des Technologies Industrielles' (ENSGTI) - *Pau* Specialization in industrial energy ▪ Fluid mechanics ▪ Renewable energies ▪ Computational fluid dynamics ▪ Numerous team projects
2013-2015	Preparatory classes to engineering school - *Pau*
2012-2013	Undergraduate studies for engineering school entry exams at lycée Paul Cézanne - *Aix en Provence*
2012	Scientific high school diploma with honours - *Aix en Provence*

Date

10/2018 – 09/2021

Ph.D. defense: 11/26/2021

Ph.D. thesis

Ph.D. thesis - PROMES CNRS superv. by A.Toutant and F.Bataille - *Perpignan*
Simulation and modeling of flows in gas-pressurized solar receivers
Research areas: computational fluid dynamics, turbulence, heat transfers, CSP
Expert in Thermal Large Eddy Simulations and Direct Numerical Simulations

- High Performance Computing (HPC)
- Multi-scale approach
- TrioCFD – use and programming, VisIt

Professional experiences

10/2022 – *pres.*

Postdoctoral student - INRIA – supervised by Rémi Manceau - *Pau*
Development of an adaptative hybrid RANS/LES methodology
CFD, self-adaptive meshing based on physical criteria, HTLES model
Code_Saturne, GMSH

09/2021 - 09/2022

Temporary research and teaching assistant - PROMES CNRS - *Perpignan*
Development and improvement of subgrid-scale models of T-LES
CFD, turbulence, heat transfers, mixed models, CSP
TrioCFD, VisIt

04/2018 - 09/2018

Industrial internship (M2) - EOLINK supervised by M.Guyot - *Brest*
Optimization of windturbine placement in an offshore windfarm
Code development, wake model, optimisation algorithm
Matlab, WindPRO, OpenWind

06/2017 - 09/2017

Research internship (M1) - PIMENT superv. by A.Bastide - *La Réunion island*
Modeling smoke extraction in buildings
CFD, mixed convection, natural ventilation, smoke extraction
Fire Dynamics Simulator, Tecplot360

Research activities

- Publications in scientific journals
  - International: 7
  - National: 2
- Conferences
  - International: 5
  - National: 3
- Obtaining computational hours on supercomputers (total: 26 million of hours)
  - 3 calls for national projects (GENCI-DARI)
  - 1 call for european project (PRACE)
- 1 review for an international journal
- 1 review for an international conference
- 3 reviews for a national conference

Teachings

- 400 hours (lectures, tutorials, practical works, and projects)
  - University of Perpignan Via Domitia & Sup EnR engineering school (300 h) - *Perpignan*
  - University of Pau & Pays de l'Adour & ENSGTI engineering school (100h) - *Pau*
- 60 hours of private lessons to secondary school pupils - videoconference - Hellomentor plateform
- Volunter homework support at the Hameau social centre - *Pau*

Awards

- Valedictorian throughout my three years in engineering school, ENSGTI
- 2 times selected for Biot-Fourier award of the Société Française de Thermique (2020-21)
- Ranked 4th of the Assoc. Prof. competition of the PROMES laboratory in 2022

Publications

- **Papers published in international journals:**

[IJ1] B. Boudraa, **M. David**, A. Toutant, F. Bataille and R. Bessiah "Large eddy simulations of a turbulent flow with hybrid nanofluid subjected to symmetric and asymmetric heating", accepted in *International Journal of Heat and Fluid Flow*.

[IJ2] **M. David**, A. Toutant, et F. Bataille, "Thermal Large-Eddy Simulations methods to model highly anisothermal and turbulent flows", *Physics of Fluids*, vol 35, p. 035106, Mar. 2023.

[IJ3] **M. David**, A. Toutant, et F. Bataille, "Study of asymmetrically heated flows passing through gas-pressurized solar receivers using Direct Numerical Simulations", *International Journal of Heat and Mass Transfer*, vol. 201, p. 123577, Feb. 2023.

[IJ4] **M. David**, A. Toutant, and F. Bataille, “Impact of asymmetrical heating on the uncertainty propagation of flow parameters on wall heat transfers in solar receivers,” *Applied Thermal Engineering*, vol. 199, p. 117547, Nov. 2021.

[IJ5] **M. David**, A. Toutant, and F. Bataille, “Direct simulations and subgrid modeling of turbulent channel flows asymmetrically heated from both walls,” *Physics of Fluids*, vol. 33, no. 8, p. 085111, Aug. 2021.

[IJ6] **M. David**, A. Toutant, and F. Bataille, “Investigation of thermal large-eddy simulation approaches in a highly turbulent channel flow submitted to strong asymmetric heating,” *Physics of Fluids*, vol. 33, no. 4, p. 045104, Apr. 2021.

[IJ7] **M. David**, A. Toutant, and F. Bataille, “Numerical development of heat transfer correlation in asymmetrically heated turbulent channel flow ,” *International Journal of Heat and Mass Transfer*, vol. 164, p. 120599, Jan. 2021.

- **Papers published in national journal:**

[NJ1] **M. David**, A. Toutant, and F. Bataille, “Analyse de sensibilité des flux de chaleur pariétaux en canal asymétriquement chauffé au moyen d’une corrélation permettant d’estimer les transferts de chaleur,” *Entropie*, vol. 2, no. 2, Nov. 2021.

[NJ2] **M. David**, A. Toutant, and F. Bataille, “Evaluation de modèles de simulation des grandes échelles en canal plan turbulent chauffé asymétriquement : de la comparaison des grandeurs intégrales à l’analyse des corrélations,” *Entropie*, vol. 1, no. 4, Nov. 2020.

Conferences

[IC1] **M. David**, M. Mehta, and R. Manceau, “Towards self-adaptivity in hybrid RANS/LES based on physical criteria” presented at the 10th international symposium on Turbulence, Heat and Mass Transfer, Rome, Italy, Sep. 2023

[IC2] A.Toutant, **M. David**, Y. Zatout, F. Bataille, L. Mathelin, O. Semeraro, “Thermal large eddy simulations for high temperature solar receivers” presented at the 17th International Heat Transfer Conference, Cape Town, South Africa, Aug. 2023

[IC3] **M. David**, A. Toutant, and F. Bataille, "Study of anisothermal channel flow physics with direct numerical simulations" presented at the Franco-Polish Mechanics Seminars, Perpignan, France, Oct 2021.

[IC4] **M. David**, A. Toutant, and F. Bataille, “Assessment and comparison of Large Eddy Simulations in asymmetrically heated and highly turbulent channel flows” presented at the International ERCOFTAC Symposium on Engineering Turbulence Modelling and Measurements, Rhodes, Greece, Sep. 2021.

[IC5] **M. David**, A. Toutant, and F. Bataille, “Sensitivity analysis of heat transfers in an asymmetrically heated turbulent channel flow” presented at the International Conference on Computational Heat Mass and Momentum Transfer, Paris, France, May 2021.

- **National conferences:**

[NC1] **M. David**, A. Toutant, and F. Bataille, “Tests et améliorations de modèles mixtes de Simulation des Grandes Échelles d’un écoulement à fort nombre de Reynolds en canal asymétriquement chauffé,” presented at the SFT, Valencienne, France, Jun. 2022.

[NC2] **M. David**, A. Toutant, and F. Bataille, “Développement et analyse d’une corrélation pour estimer les transferts de chaleur en situation de fort chauffage asymétrique d’un écoulement en canal.,” presented at the SFT, Belfort, France, Jun. 2021.

[NC3] **M. David**, A. Toutant, and F. Bataille, “Tests a posteriori de modèles de sous-mailles dans un écoulement en canal plan à haut nombre de Reynolds et soumis à un fort flux de chaleur,” presented at the SFT, Belfort, France, Jun. 2020.

Research report

[RR1] Annual activity report of GENCI 2021

Public participations

- **M. David** and R. Manceau, “Demonstrator of self-adaptive hybrid RANS/LES based on physical criteria: application to the backward-facing step case,” IHCantabria, invited Prof. J. Lopez Lara, Nov. 2023.

Publication under review

- **M. David** and R. Manceau, “On the feasibility of a self-adaptive strategy for hybrid RANS/LES,” submitted to international journal