

## Dr. Sofiane Benhamadouche

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### RESEARCH-EXPERT IN COMPUTATIONAL FLUID DYNAMICS

- ☞ *Since September 2015* : Associate Editor of Nuclear Engineering and Design
- ☞ *September 2013 → November 2015* : Chair of Industrial flows committee at IAHR (International Association for Hydro-environment engineering and Research)
- ☞ *January 2012 → December 2015* : part-time researcher at **IMSIA** (structural mechanics Lab.)
- ☞ *Since December 2010* : **Research-Expert** in the R&D division at **Électricité De France** (Fluid Mechanics, Energy and Environment Dept., Chatou, France)
  - Responsible of various actions around **turbulence modeling** ((U)RANS and LES) for industrial flows particularly in the nuclear field.
  - Implantation and verification/validation of turbulence models and **numerical methods** in *Code\_Saturne* (EDF in-house and open-source CFD tool)
  - Advanced **CFD** studies for **thermal-hydraulic** problems related to safety and optimization issues (Temperature heterogeneity in the hot legs, life-time extension for PWR, fuels assemblies vibrations ...).
  - Contribution to the development of High Performance Computing capabilities of *Code\_Saturne HPC* (High Performance Computing), use of massively parallel machines, Origin2000, BlueGene L/P/Q, ...).
  - **Supervision** of 6 PhDs, 3 post-docs and more than 10 internships.
  - Contribution to several **European projects**:
    - ✓ Contributor to Flomania (Flow Physics Modelling – An Integrated Approach).
    - ✓ Contributor to Desider (Detached Eddy Simulation for Industrial Aerodynamics).
    - ✓ Observe of Go4Hybrid (Grey Area Mitigation for Hybrid RANS-LES)
- ☞ *September 2000 → December 2010* : **Research-Engineer** in the R&D division at Électricité De France (Fluid Mechanics, Energy and Environment Dept., Chatou, France)
- ☞ *Since February 2008* : **Lecturer** of Fluid Mechanics at Ecole des Ingénieurs de la Ville de Paris (France).
- ☞ *Since September 2004* : **Lecturer** of Fluid Mechanics at **Ecole des Ponts ParisThech** (France)
- ☞ *September 2001 → March 2006*: **PhD** at the University of Manchester « Large Eddy Simulation with the unstructured collocated arrangement »
- ☞ *September 1996 → June 2000* : École Nationale des Ponts et Chaussée (**ENPC**)

### SCIENTIFIC COLLABORATIONS

- ☞ *July-August 2002* : Center for Turbulence Research, CTR, Stanford University, USA.
- ☞ *September and November 2006* : Barcelona Super Computing Center (BSC), Spain.
- ☞ *June-December 2007* : Institut Jean Le Rond D'Alembert, Université Paris Pierre et Marie Curie, Paris, France.

## **AWARDS**

Nomination for le “Bill Morton Prize” during ICFD Conference on Numerical Methods for Fluid Dynamics, Oxford, 2001.

## **TECHNICAL COMMITEES**

International Symposium of Turbulence, Heat and Mass Transfer (THMT), International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH), International Conference on Nuclear Engineering (ICONE)

## **TECHNICAL PROGRAM CHAIR**

International Embedded Topical Meeting on Advances in Thermal Hydraulics (ATH)

## **REVIEWER**

**Journals** : Phys. Of Fluids, Int. J. of Heat and Fluid Flow, Int. J. of Heat and Mass Transfer, Journal of Fluids Engineering, Environmental Fluid Mechanics, J. of Hydraulic Research, Nuclear Engineering and Design, Int. J. for Numerical Methods in Fluids, Progress in Computational Fluid Dynamic Int. J., American Institute for Aeronautics and Astronautics Journal (AIAA J.), Journal of Turbulence, J. of Fluids and Structures.

In the **editorial board** of Progress in Computational Fluid Dynamic Int. J.  
**Associate Editor** of Nuclear Engineering and Design.

**Conferences** : International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH), International Symposium on Turbulence, Heat and Mass Transfer (THMT), ASME Pressure Vessels and Piping conference (PVP), International Conference on Nuclear Engineering (ICONE), Engineering Turbulence Modelling and Measurements (ETMM).

## **BOOKS**

P-L. Viollet, **S. Benhamadouche**, M. Benoit, J-P. Chabard, D. Violeau. « *Problèmes résolus de mécanique des fluides* », Presses de l’Ecole Nationale des Ponts et Chaussées, 2010.

## **CONTRIBUTIONS**

W. Haase, M. Braza, A. Revell. “*DESider – A European Effort on Hybrid RANS-LES Modelling : Results of the European-Union Funded Project, 2004 - 2007*”, Notes on numerical fluid mechanics and multidisciplinary design, vol 103, Springer, 2009.

W. Haase, B. Aupoix, U. Bunge, D. Schwamborn. ”*FLOMANIA — A European Initiative on Flow Physics Modelling : Results of the European-Union funded project, 2002 – 2004*”, Notes on numerical fluid mechanics and multidisciplinary design, vol 94, Springer, 2006.

## **INVITATIONS TO CONFERENCES**

Keynote during NURETH16 (Chicago, september 2015)  
Keynote during CFD Canada (Sherbrooke, may 2013)

## RECENT JOURNAL PUBLICATIONS

1. **S. Benhamadouche**, 2017. On the use of (U)RANS and LES approaches for turbulent incompressible single phase flows in nuclear engineering applications. *Nuclear Engineering and Design*, 312, pp. 2-11.
2. **S. Benhamadouche**, M. Arenas, W.J. Malouf, 2017. Wall-resolved Large Eddy Simulation of a flow through a square-edged orifice in a round pipe at  $Re = 25,000$ . *Nuclear Engineering and Design*, 312, pp. 128-136.
3. A. Keshmiri, K. Osman, **S. Benhamadouche**, N. Shokri, 2016. Assessment of advanced RANS models against large eddy simulation and experimental data in the investigation of ribbed passages with passive heat transfer. *Numerical Heat Transfer, Part B: Fundamentals*, 69 (2), pp. 96-110.
4. F. Dehoux, **S. Benhamadouche**, R. Manceau. 2016 An elliptic blending differential flux model for natural, mixed and forced convection. *Int. J. Heat Fluid Fl.* pp. 1–19.
5. C. Fageul, **S. Benhamadouche**, E. Lamballais, D. Laurence, 2015. DNS of turbulent channel flow with conjugate heat transfer: Effect of thermal boundary conditions on the second moments and budgets. *International Journal of Heat and Fluid Flow*, 55, pp. 34-44.