

Curriculum Vitae

Ola Widlund

38 years old, single
Nationality: Swedish

Tel: +33-(0)4 76 43 87 11 (home)
+33-(0)6 64 04 40 79 (mobile)

33 avenue Alsace Lorraine (5^{ème} étage)
F-38000 Grenoble, FRANCE

E-mail: ola.widlund@free.fr

PROFESSIONAL EXPERIENCE

22 May 2003 – 21 Nov 2004 *CEA/Grenoble*
DEN/DER/SSTH/LDAS
17 rue des Martyrs
F-38054 Grenoble (France)

Visiting researcher in a team working on future gas-cooled high-temperature nuclear reactors (HTR). Improvements of existing thermohydraulic simulation codes. Development of new features for the modeling of HTR core neutronics and heat transfer.

March–April 2003 *Technische Universität Ilmenau*
Fakultät für Maschinenbau
Ilmenau, Germany

Visiting researcher in a collaboration on the numerical modeling of magnetohydrodynamic (MHD) flows.

Feb. 2001 – Feb. 2003 *CNRS-EPM (MADYLAM)*
1340 rue de la Piscine, B. P. 95
F-38402 St Martin d'Hères (France)

Post-doc financed by a personal Marie Curie Fellowship from the European Commission.

- Development of magnetohydrodynamic (MHD) turbulence models and methods for numerical simulation of MHD flows. Implementation and validation of models in *FLUENT* (commercial CFD code).
- Development of a pseudo-spectral code for direct numerical simulation (DNS) of MHD turbulence. Optimization for the vector/parallel supercomputer NEC/SX5 at *IDRIS (France)*.
- Teaching of industrial fluid mechanics at *INP Grenoble* (applied exercises, introductory level).

Sept. 1990 – Jan. 1996 *ALSTOM Power Environmental AB (ex ABB Fläkt Industri AB)*
SE-351 87 Växjö (Sweden)

- Specialist in fluid mechanics (02/94–01/96). Responsible for CFD activities. Applications in air pollution control, paper making and industrial paint finishing. Turbulence modeling, combustion, heat transfer and multiphase flows (with the commercial code *CFX*).
- R&D project manager and technical specialist (01/92–01/94). Air pollution control, in particular processes for Mercury and dioxin removal. Budget 0,6 MEuros/year.
- R&D engineer (09/90–01/92). Air pollution control. Numerical modeling, statistical analysis, aerosol physics, gas adsorption/absorption phenomena.

EDUCATION

Feb. 1996 – Dec. 2000

Kungliga Tekniska Högskolan (KTH)
(Royal Institute of Technology)
Department of Mechanics/Faxénlaboratoriet
SE-100 44 Stockholm, Sweden

Ph. D. thesis in fluid mechanics under the direction of Prof. Fritz Bark (*KTH*) and Prof. Said Zahrai (*ABB Corporate Research*) at the *Faxén Laboratory* (a research centre for industrial fluid mechanics applications). The project was partly sponsored by *ABB Industrial Systems AB* to support their activities in continuous steel casting.

- Development of a new type of turbulence models which account for structural (length-scale) anisotropy appearing in a magnetic field. Thesis “Modeling of magnetohydrodynamic turbulence”, defended on December 15, 2000.
- Teaching in classical mechanics at *KTH* (exercises, introductory level).
- Teaching in numerical simulation techniques using the commercial code *CFX*. Post-graduate level. Responsible for technical support on *CFX* at the laboratory.
- Teaching and development of practical examples (numerical simulation) for a course in multiphase fluid mechanics. Post-graduate level.

Sept. 1985 – Aug. 1990

Lunds Tekniska Högskola (LTH)
(Lund Technical University)
SE-220 00, Sweden

Technical university, M.Sc. in Engineering Physics.

- Atomic and molecular spectroscopy. Semiconductor physics. Environmental engineering.
- Teaching in classical physics (laboratory course, introductory course).

June 1987 – Aug. 1988

Military service (15 months).

LANGUAGE SKILLS

- Swedish (native)
- English (fluently)
- French (fluently)
- German (well)
- Spanish (well)

BIBLIOGRAPHY

Peer-reviewed journals

1. O. Widlund, S. Zahrai and F. H. Bark (1998), "Development of a Reynolds stress closure for modeling of homogeneous MHD turbulence", *Physics of Fluids* **10**, pp. 1987-1996.
2. O. Widlund, S. Zahrai and F. H. Bark (2000), "Structure information in rapid distortion analysis and one-point modeling of axisymmetric magnetohydrodynamic turbulence", *Physics of Fluids* **12**, pp. 2609-2620.
3. O. Widlund (2001), "Modeling anisotropic MHD turbulence in simulations of liquid metal flows", *Magnetohydrodynamics* **37**, pp. 3-12.
4. O. Widlund (2003), "Wall functions for numerical modeling of laminar MHD flows", *European J Mechanics B/Fluids* **22**, pp. 221-237.
5. O. Widlund, H. Ragvald, C. Halldin, and N. Lindqvist (1997), "Aerodynamics of high-speed paper machines", *TAPPI Journal* **80**, pp. 113-118.

Conference proceedings

6. O. Widlund, S. Zahrai and F. H. Bark (1999), "On MHD turbulence models for simulation of magnetic brakes in continuous steel casting processes", in *Transfer Phenomena in Magnetohydrodynamic and Electroconducting Flows*, eds. A. Alemany, Ph. Marty, J. P. Thibault. Selection of full-length articles, *3rd Int. PAMIR Conference*, Aussois, France, Sept. 1997. Kluwer Academic Publishers, Dordrecht.
7. O. Widlund and G. Tallbäck, "Modeling of anisotropic turbulent transport in simulations of liquid metal flows in magnetic fields". *3rd Int. Symposium on Electromagnetic Processing of Materials, EPM2000*, April 2000, Nagoya, Japan. ISIJ.
8. O. Widlund, "Modeling anisotropic MHD turbulence in simulations of liquid metal flows". *4th Int. PAMIR Conference*, Sept. 2000, Presqu'île de Giens, France. PAMIR.
9. O. Widlund, "Using structure information in modeling of magnetohydrodynamic turbulence". *TSFP-2, 2nd Int. Symp. on Turbulence and Shear Flow Phenomena*, June 2001, Stockholm, Sweden. KTH.
10. O. Widlund, "Wall functions for numerical modeling of laminar MHD flows". *5th Int. PAMIR Conference*, Sept. 2002, Ramatuelle, France. PAMIR.

Theses and reports

11. *A normal-incidence monochromator for MAX-lab beamline 52*. "Master of Science" thesis. LRAP 90-?. LTH, Lund, 1990.
12. *A Reynolds stress closure for magnetic dissipation of turbulence in liquid metals*. "Licentiate of Technology" thesis (Swedish diploma: half-way Ph.D.). TRITA-MEK 99:1, KTH, Stockholm, 1999.
13. *Implementation of MHD model equations in CFX 4.3*. Technical Report TRITA-MEK 2000:10, KTH, Stockholm, 2000.
14. *Modeling of magnetohydrodynamic turbulence*. Ph.D. thesis. TRITA-MEK 2000:11, KTH, Stockholm, 2000.

REFeree FOR INTERNATIONAL JOURNALS

- Physics of Fluids
- International Journal for Numerical Methods in Fluids
- International Journal of Thermal Sciences