

NILS TANGEFJORD BASSE
TOFTEHØJ 23, HØRUPHAV
6470 SYDALS
DENMARK

MOBILE: +45-23929302
E-MAIL: NILS.BASSE@NPB.DK
HOMEPAGE: WWW.NPB.DK



PERSONAL INFORMATION

DATE OF BIRTH: May 9, 1974
NATIONALITY: Danish
CIVIL STATUS: Married, two children (born 2009 and 2011)

WORK EXPERIENCE

- 2018 – present **Senior Specialist, Computational Fluid Dynamics (CFD), Danfoss A/S, Refrigeration and Air Conditioning Controls, Nordborg, Denmark**
- Valve research and development:
 - CFD simulations
 - Acoustic measurements
- 2016 – 2018 **Computational Fluid Dynamics (CFD) Expert, Danfoss A/S, Refrigeration and Air Conditioning Controls, Nordborg, Denmark**
- 2011 – 2016 **Senior Research Engineer, Siemens A/S, Flow Instruments, Sønderborg, Denmark**
- Flowmeter research and development:
 - Technology project management
 - Coriolis and electromagnetic flowmeters
- 2009 – 2011 **Principal Scientist, ABB Switzerland Ltd., Corporate Research, Baden-Dättwil, Switzerland**
- Air-insulated medium-voltage load break switches
 - Gas-insulated medium- and high-voltage circuit breakers
 - Pressure and optical flow measurements in circuit breakers
- 2006 – 2008 **Scientist, ABB Switzerland Ltd., Corporate Research, Baden-Dättwil, Switzerland**
- 2002 – 2005 **Postdoctoral Associate, Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts, USA**
- Fusion plasma turbulence measurements using phase-contrast imaging and reflectometry
 - Control software and camera for lower hybrid current drive

EDUCATION

- 1999 – 2002 **Ph.D. in Physics** from the Niels Bohr Institute at the University of Copenhagen, Denmark. The title of my Ph.D. Thesis is: “Turbulence in Wendelstein 7-AS Plasmas Measured by Collective Light Scattering”
[Included a total of two years work at the Max-Planck-Institut für Plasmaphysik in Garching, Germany]
- 1996 – 1998 **M.Sc. in Physics** from the Niels Bohr Institute at the University of Copenhagen, Denmark. The title of my M.Sc. Thesis is: “Modelling of Neutron Emissivities at JET Using Charge Exchange Spectroscopic Data”
[Included a one-year stay at the Culham Science Centre in Culham, UK]
- 1993 – 1996 **B.Sc. in Physics** (Mathematics 2nd topic) from the Niels Bohr Institute at the University of Copenhagen, Denmark
- 1990 – 1993 **High School** focusing on Mathematics and Physics, Middelfart, Denmark

TEACHING

- 2018 – present **External examiner** of mechanical engineering in the Danish university system
- 2000 **Teaching Assistant** during a one-semester course in Mathematics (“Matematik A”) for first year Chemistry students at the University of Copenhagen, Denmark

PATENTS

- **Gas insulated circuit breaker**, publication number EP 2 455 957 A1
- **Circuit breaker**, publication number WO 2009/140999 A1

STANDARDISATION WORK

- 2015 – 2016 Member of Danish Standards
- Participation in ISO/TC 30/SC 5/WG 5 to write new standard:
“Measurement of fluid flow in closed conduits – Guidance for the use of electromagnetic flowmeters for conductive liquids”

LANGUAGES

- Danish (mother tongue)
- English and German (fluently spoken and written)
- Swedish (spoken)
- French (basic knowledge)

FURTHER KNOWLEDGE

- Programming languages: Fortran, IDL, MATLAB, MDS+, Pascal
- Simulation tools: ANSYS CFD/Mechanical, STAR-CCM+ and Cobham Opera-3d (Vector Fields)
- Operating systems: Windows and Unix/Linux
- Signal processing
- Experimental skills: Acousto-optic modulators, data acquisition (CAMAC, compact PCI, PCI), flowmeters, high speed cameras, infrared and visible lasers and detectors, microphones, microwave components, optics, pressure sensors

REFERENCES

Available upon request

APPENDICES

- Appendix A **Further education:** Software training, university courses, personal development, summer schools
- Appendix B **Supervision:** 15 students from B.Sc. to Ph.D. level
- Appendix C **First author** of 16 journal publications
- Appendix D **Co-author** of 24 journal publications
- Appendix E **Refereeing** for 14 journals

APPENDIX A - FURTHER EDUCATION

2017	ANSYS AIM , Nordborg/Kolding, Denmark
2017	ANSYS Acoustics , Nordborg, Denmark
2016	ANSYS Mechanical , Sønderborg, Denmark
2014	Personal Performance , Nordborg, Denmark
2013	Multiphase Flow Modeling in ANSYS CFX , Aarhus, Denmark
2012 – 2013	Siemens People and Business Management 3 (PBM3) , Billund, Denmark
2011	Opera-3d software training course , Kidlington, England
2011	Introduction to ANSYS CFD with CFX , Oslo, Norway
2009	KARRASS Effective Negotiating , Zürich, Switzerland
2007	Introduction to Macroeconomics , ETH Zürich, Switzerland
2007	ABB Leadership Challenge Program , Zürich, Switzerland
2006	ABB Project Management Basics , Ladenburg, Germany
2001	16th NATO Advanced Study Institute School in Physics , Geilo, Norway
1999	4th Carolus Magnus Summer School on Plasma Physics , Maastricht, The Netherlands
1997	34th Culham Plasma Physics Summer School , Culham, England

APPENDIX B - SUPERVISION

2018	Adrien Chéreau, M.Sc. student at INSA Rennes “CFD-based optimisation using open-source tools”
2014 – 2016	Matej Simurda, Ph.D. student at the University of Southern Denmark “Mathematical Modeling of Ultrasound Propagation in Multi-phase Flow”
2016	Michael Leth-Nielsen, M.Sc. student at the University of Southern Denmark “Simulations of AC magnetic fields in flowmeters”
2015	Janna Hofmann, M.Sc. student at Karlsruhe Institute of Technology “Upgrade of a LabVIEW control system of a 3D measuring robot to analyze the magnetic field inside an electromagnetic flowmeter”
2015	Francesco Russo, intern at TU Delft CFD simulations of incompressible and compressible flow
2015	Dionysios-Konstantinos Neofytos, M.Sc. student at the University of Southern Denmark “High speed gas flow measurements and analysis in Coriolis flow meters”
2014	Darlene O’Carroll, intern at University of Limerick Competitor benchmarking
2014	Brice Rogié, M.Sc. student at INSA Toulouse “Water Hammer Effect on Coriolis Flowmeter – Pressure Wave Propagation”
2014	Yu Lin, M.Sc. student at the University of Southern Denmark “Numerical Modeling of Electromagnetic Flowmeter”
2014	Katrine A. Juhl, M.Sc. student at Aalborg University “Aerated Flow Measurement and Modelling of a Coriolis Flowmeter”
2013	Leah Hormann, M.Sc. student at the Mannheim University of Applied Sciences “Computational Fluid Dynamics Simulations of Electromagnetic Flowmeters”
2013	Matej Simurda, M.Sc. student at the University of Southern Denmark “Two Dimensional Analysis of Clamp-On Ultrasonic Flowmeters”
2012	Elvar Ásmundsson and Mikkel H. Callesen, B.Sc. students at the University of Southern Denmark EA: “Turbulent Flow in Straight Pipes” MHC: “Pressure Loss in Pipes”
2010	Christopher Kissing, M.Sc. student at the Cologne University of Applied Sciences “Untersuchung von dreidimensionalen Strömungen in einem kleinen Schaltermmodell”
2004 – 2005	Arturo Dominguez, Ph.D. student in the MIT Department of Physics “Study of Density Fluctuations and Particle Transport at the Edge of I-Mode Plasmas”

APPENDIX C - FIRST AUTHOR

1. **Turbulence intensity and the friction factor for smooth- and rough-wall pipe flow**, N.T.Basse, *Fluids* 2 (2017) 30
2. **Coriolis flowmeter damping for two-phase flow due to decoupling**, N.T.Basse, *Flow Measurement and Instrumentation* 52 (2016) 40-52
3. **A review of the theory of Coriolis flowmeter measurement errors due to entrained particles**, N.T.Basse, *Flow Measurement and Instrumentation* 37 (2014) 107-118
4. **Measured 3D turbulent mixing in a small-scale circuit breaker model**, N.T.Basse et al., *Journal of Physics D: Applied Physics* 44 (2011) 245201
5. **Measured turbulent mixing in a small-scale circuit breaker model**, N.P.T.Basse et al., *Applied Optics* 48 (2009) 6381-6391
6. **Quantitative analysis of gas circuit breaker physics through direct comparison of 3D simulations to experiment**, N.P.Basse et al., *IEEE Transactions on Plasma Science* 36 (2008) 2566-2571
7. **A study of multiscale density fluctuation measurements**, N.P.Basse, *IEEE Transactions on Plasma Science* 36 (2008) 458-461
8. **Diagnostic systems on Alcator C-Mod**, N.P.Basse et al., *Fusion Science and Technology* 51 (2007) 476-507
9. **Density fluctuations on mm and Mpc scales**, N.P.Basse, *Physics Letters A* 340 (2005) 456-460
10. **Characterization of core and edge turbulence in L- and enhanced D-alpha H-mode Alcator C-Mod plasmas**, N.P.Basse et al., *Physics of Plasmas* 12 (2005) 052512 (14 pages)
11. **Small-angle scattering theory revisited: Photocurrent and spatial localization**, N.P.Basse et al., *Physica Scripta* 71 (2005) 280-292
12. **Study of intermittent small-scale turbulence in Wendelstein 7-AS plasmas during controlled confinement transitions**, N.P.Basse et al., *Physics of Plasmas* 12 (2005) 012507 (11 pages)
13. **Characterization of turbulence in L- and ELM-free H-mode Wendelstein 7-AS plasmas**, N.P.Basse et al., *Plasma Physics and Controlled Fusion* 45 (2003) 439-453
14. **Turbulence at the transition to the high density H-mode in Wendelstein 7-AS plasmas**, N.P.Basse et al., *Nuclear Fusion* 43 (2003) 40-48
15. **Spatial distribution of turbulence in the Wendelstein 7-AS stellarator**, N.P.Basse et al., *Plasma Sources Science and Technology* 11 (2002) A138-A142
16. **Low- and high-mode separation of short wavelength turbulence in dithering Wendelstein 7-AS plasmas**, N.P.Basse et al., *Physics of Plasmas* 9 (2002) 3035-3049

APPENDIX D - CO-AUTHOR

1. **Fourier collocation approach with mesh refinement method for simulating transit-time ultrasonic flow meters under multiphase flow conditions**, M.Simurda, L.Duggen, N.T.Basse and B.Lassen, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control 65 (2018) 244-257
2. **A Fourier collocation approach for transit-time ultrasonic flowmeter under multi-phase flow**, M.Simurda, B.Lassen, L.Duggen and N.T.Basse, Journal of Computational Acoustics 25 (2017) 1750005
3. **Scaling of turbulence intensity for low-speed flow in smooth pipes**, F.Russo and N.T.Basse, Flow Measurement and Instrumentation 52 (2016) 101-114
4. **Focused shadowgraphy in the heating volume of a high-voltage gas circuit breaker**, R.Wiget, F.Lundqvist and N.T.Basse, IEEE Transactions on Plasma Science 39 (2011) 2852-2853
5. **Arc-induced turbulent mixing in an SF₆ circuit breaker model**, R.Bini, N.T.Basse and M.Seeger, Journal of Physics D: Applied Physics 44 (2011) 025203
6. **Overview of the Alcator C-Mod research programme**, S.Scott, A.Bader, M.Bakhtiari, N.Basse et al., Nuclear Fusion 47 (2007) S598-S607
7. **Energetic particle physics studies on Alcator C-Mod**, J.A.Snipes, N.Basse et al., Fusion Science and Technology 51 (2007) 437-450
8. **Internal transport barriers in Alcator C-Mod**, C.L.Fiore, D.R. Ernst, J. E. Rice, K. Zhurovich, N. Basse et al., Fusion Science and Technology 51 (2007) 303-316
9. **Confinement and transport research in Alcator C-Mod**, M.Greenwald, N.Basse et al., Fusion Science and Technology 51 (2007) 266-287
10. **Phase contrast imaging of waves and instabilities in high temperature magnetized fusion plasmas**, M.Porkolab, J.C.Rost, N.Basse et al., IEEE Transactions on Plasma Science 34 (2006) 229-234
11. **Comparisons of small ELM H-mode regimes on the Alcator C-Mod and JFT-2M tokamaks**, A.E.Hubbard, K.Kamiya, N.Oyama, N.Basse et al., Plasma Physics and Controlled Fusion 48 (2006) A121-A129
12. **Transport phenomena in the edge of Alcator C-Mod plasmas**, J.L.Terry, N.P.Basse et al., Nuclear Fusion 45 (2005) 1321-1327
13. **Overview of the Alcator C-Mod program**, M.Greenwald, D.Andelin, N.Basse et al., Nuclear Fusion 45 (2005) S109-S117
14. **Observation and modelling of ion cyclotron range of frequencies waves in the mode conversion region of Alcator C-Mod**, Y.Lin, S.Wukitch, A.Parisot, J.C.Wright, N.Basse et al., Plasma Physics and Controlled Fusion 47 (2005) 1207-1228
15. **W7-AS: One step of the Wendelstein stellarator line**, F.Wagner, S.Bäumel, J.Baldzuhn, N.Basse et al., Physics of Plasmas 12 (2005) 072509 (22 pages)
16. **Ion cyclotron range of frequency mode conversion physics in Alcator C-Mod: Experimental measurements and modeling**, S.J.Wukitch, Y.Lin, A.Parisot, J.C.Wright, P.T.Bonoli, M.Porkolab, N.Basse et al., Physics of Plasmas 12 (2005) 056104 (8 pages)
17. **Active and fast particle driven Alfvén eigenmodes in Alcator C-Mod**, J.A.Snipes, N.Basse et al., Physics of Plasmas 12 (2005) 056102 (8 pages)
18. **Toroidal rotation and momentum transport in Alcator C-Mod plasmas with no momentum input**, J.E.Rice, W.D.Lee, E.S.Marmor, N.P.Basse et al., Physics of Plasmas 11 (2004) 2427-2432
19. **Investigation of ion cyclotron range of frequencies mode conversion at the ion-ion hybrid layer in Alcator C-Mod**, Y.Lin, S.Wukitch, P.Bonoli, E.Nelson-Melby, M.Porkolab, J.C.Wright, N.Basse et al., Physics of Plasmas 11 (2004) 2466-2472
20. **Local threshold conditions and fast transition dynamics of the L-H transition in Alcator C-Mod**, A.E.Hubbard, B.A.Carreras, N.P.Basse et al., Plasma Physics and Controlled Fusion 46 (2004) A95-A104
21. **Changes in density fluctuations associated with confinement transitions close to a rational edge rotational transform in the W7-AS stellarator**, S.Zoletnik, N.P.Basse et al., Plasma Physics and Controlled Fusion 44 (2002) 1581-1607
22. **CO₂ laser based two-volume collective scattering instrument for spatially localized turbulence measurements**, M.Saffman, S.Zoletnik, N.P.Basse et al., Review of Scientific Instruments 72 (2001) 2579-2592
23. **Trace tritium and the H-mode density limit**, G.F.Matthews, K.-D.Zastrow, P.Andrew, N.P.Basse et al., Journal of Nuclear Materials 266-269 (1999) 1134-1138
24. **Neutron profile measurements for trace tritium experiments**, M.J.Loughlin, N.Watkins, J.M.Adams, N.Basse et al., Review of Scientific Instruments 70 (1999) 1123-1125

APPENDIX E - REFEREEING

2018 – present	Smart Materials and Structures
2018 – present	Water
2018 – present	Fluids
2018 – present	Multidiscipline Modeling in Materials and Structures
2015 – present	Measurement Science and Technology
2014 – present	Flow Measurement and Instrumentation
2012 – present	Journal of Physics D: Applied Physics
2010 – present	Physics Letters A
2010 – present	IEEE Transactions on Power Delivery
2009 – present	Physics of Plasmas
2009 – present	Plasma Physics and Controlled Fusion
2008 – present	The Open Plasma Physics Journal
2007 – present	IEEE Transactions on Plasma Science
2005 – present	Nuclear Fusion
2004	US Department of Energy