# Curriculum Vitae – Dr. Maurits H. Silvis

Chair of Fluid Dynamics
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## Experience

- Software and Test Automation Engineer — 2020/02 – present
  beQualified GmbH, Frankfurt, Germany
- Guest Researcher in Computational Fluid Dynamics — 2019/02 – present
  Technical University of Darmstadt, Germany

## Education

- PhD Computational Fluid Dynamics — 2013/09 – 2020/10
  University of Groningen, The Netherlands
  Thesis: Physics-based turbulence models for large-eddy simulation: Theory and application to rotating turbulent flows
- MSc Theoretical Physics — 2010/09 – 2012/08
  University of Groningen, The Netherlands
  Thesis: Signatures of exciton-phonon coupling in linear absorption spectra of molecular aggregates: A polaron transformation approach
  Distinction: *Cum laude* (with honor)
- BSc Physics — 2007/09 – 2010/08
  University of Groningen, The Netherlands
  Thesis: A quaternion formulation of the Dirac equation
  Distinction: *Cum laude* (with honor)

## Study and research abroad

- *CTR Summer Program 2016* — 2016/06 – 2016/07
  Center for Turbulence Research
  Stanford University, Stanford, California
- *Mathematics of Turbulence* — 2014/09, 2014/11
  Institute for Pure and Applied Mathematics (IPAM)
  University of California, Los Angeles (UCLA)

## Awards

- Awarded participation in the 2018 conference on *Symmetry and Computation*
- Received the Young Scientist Award for the best oral presentation at the 2017 *International Workshop on Complex Turbulent Flows*
- Awarded participation in Stanford University's 2016 *CTR Summer Program*
- Awarded participation in IPAM's 2014 *Mathematics of Turbulence* long program
- Obtained MSc degree in Theoretical Physics with the distinction *cum laude* (with honor)
- Obtained BSc degree in Physics with the distinction *cum laude* (with honor)
- Received the 2008 Holland Society Young Talent Incentive Award for the best first-year study results in Physics in the Netherlands

**Research interests**

- Computational fluid dynamics
- Turbulence modeling
- Large-eddy simulation

**Peer-reviewed journal publications**

4. Streher, L. B., Silvis, M. H., Cifani, P., and Verstappen, R. W. C. P. (2021). "Mixed modeling for large-eddy simulation: The single-layer and two-layer minimum-dissipation-Bardina models". *AIP Advances* 11, 015002.

3. Trias, F. X., Gorobets, A., Silvis, M. H., Verstappen, R. W. C. P., and Oliva, A. (2017). "A new subgrid characteristic length for turbulence simulations on anisotropic grids". *Physics of Fluids* 29, 115109.

2. Silvis, M. H., Remmerswaal, R. A., and Verstappen, R. (2017). "Physical consistency of subgrid-scale models for large-eddy simulation of incompressible turbulent flows". *Physics of Fluids* 29, 015105.

1. Bloemsma, E. A., Silvis, M. H., Stradomska, A., and Knoester, J. (2016). "Vibronic effects and destruction of exciton coherence in optical spectra of J-aggregates: A variational polaron transformation approach". *Chemical Physics* 481, pp. 250–261.

**Preprints**

2. Silvis, M. H., Bae, H. J., Trias, F. X., Abkar, M., and Verstappen, R. (2019). "A nonlinear subgrid-scale model for large-eddy simulations of rotating turbulent flows". arXiv: `1904.12748 [physics.flu-dyn]`.

1. Silvis, M. H. and Verstappen, R. (2015). "Physically-consistent subgrid-scale models for large-eddy simulation of incompressible turbulent flows". arXiv: `1510.07881 [physics.flu-dyn]`.

**Peer-reviewed conference proceedings**

5. Silvis, M. H. and Verstappen, R. (2019). "Nonlinear Subgrid-Scale Models for Large-Eddy Simulation of Rotating Turbulent Flows". In: *Direct and Large-Eddy Simulation XI*. Springer International Publishing, pp. 129–134.

4. Streher, L. B., Silvis, M. H., and Verstappen, R. (2018). "Mixed modeling for large-eddy simulation: The minimum-dissipation-Bardina-model". In: *Proceedings of the 7th European Conference on Computational Fluid Dynamics*. International Center for Numerical Methods in Engineering, Barcelona, Spain, pp. 335–345.

3. Silvis, M. H. and Verstappen, R. (2018). "Constructing Physically Consistent Subgrid-Scale Models for Large-Eddy Simulation of Incompressible Turbulent Flows". In: *Turbulence and Interactions*. Springer International Publishing, pp. 241–247.

2. Silvis, M. H., Remmerswaal, R. A., and Verstappen, R. (2017). "A Framework for the Assessment and Creation of Subgrid-Scale Models for Large-Eddy Simulation". In: *Progress in Turbulence VII*. Springer International Publishing, pp. 133–139.

1. Silvis, M. H., Trias, F. X., Abkar, M., Bae, H. J., Lozano-Durán, A., and Verstappen, R. W. C. P. (2016). "Exploring nonlinear subgrid-scale models and new characteristic length scales for large-eddy simulation". In: *Proceedings of the Summer Program*. Center for Turbulence Research, Stanford University, pp. 265–274.

**Metrics**

Citations: 93 h-index: 5
Citations excluding self-citations: 66 h-index excluding self-citations: 4

**International conference presentations**

11. *Symmetry and Computation*, Marseille, France, April 3–7, 2018
10. *International Workshop on Complex Turbulent Flows*, Tangier, Morocco, November 27–28, 2017
9. *70th Annual Meeting of the APS Division of Fluid Dynamics*, Denver, Colorado, United States of America, November 19–21, 2017
8. *16th European Turbulence Conference*, Stockholm, Sweden, August 21–24, 2017
7. *Direct and Large-Eddy Simulation XI*, Pisa, Italy, May 29–31, 2017
6. *69th Annual Meeting of the APS Division of Fluid Dynamics*, Portland, Oregon, United States of America, November 20–22, 2016
5. *7th Interdisciplinary Turbulence Initiative Conference on Turbulence*, Bertinoro, Italy, September 7–9, 2016
4. *4th International Conference on Turbulence and Interactions*, Cargèse, France, November 2–6, 2015
3. *15th European Turbulence Conference*, Delft, The Netherlands, August 25–28, 2015
2. *6th European Conference on Computational Fluid Dynamics*, Barcelona, Spain, July 20–25, 2014
1. *10th International Conference on Excitonic Processes in Condensed Matter, Nanostructured and Molecular Materials*, Groningen, The Netherlands, July 2–6, 2012

**Teaching experience**

- Supervision of research projects — 2014/07 – 2016/07
  University of Groningen, The Netherlands
  Tasks: Supervise bachelor and master research projects
- Teaching assistant — 2015/01 – 2016/06, 2008/09 – 2011/07
  University of Groningen, The Netherlands
  Courses: Numerical Mathematics, Partial Differential Equations, Linear Algebra, Calculus, Mathematics Refresher Course

**Other academic activities**

- Reviewer for *Physics of Fluids* — 2017/11 – 2018/04
- Organization of research group colloquiua — 2013/09 – 2017/03
- Outreach: Explain academic research to secondary school pupils and students — 2013/11, 2014/03, 2017/03

**Programming skills**

- Java, Gherkin, Python, HTML, CSS, JavaScript, PHP, SQL
- MATLAB, Mathematica, C++, Fortran, LaTeX
- Bash, Git, GitLab, GitHub, Bitbucket, Jira, Jenkins, ReportPortal

**Software**

- *lesTools*: A toolbox for the construction and assessment of subgrid-scale models for large-eddy simulations

**Languages**

- Dutch, English, German