

## Multiple Open Ph.D. Positions

# Computational Simulations of Turbulent Reacting Flows

### Job title

Research Assistant (f/m/d)

### Field of activity

Turbulent reacting flows

### Salary

TV-L 13

*Starting gross salary  
approx. 50 k€ per annum*

### Last updated on

28.03.2023

### For further questions

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### Application to

jobs@itv.rwth-aachen.de

The **Institute for Combustion Technology (ITV)** led by Prof. Dr.-Ing. Heinz Pitsch focuses on **research in combustion and its applications** in engines, gas turbines, and furnaces, chemical kinetics of combustion, turbulence theory, and multiphase flows. Our approach is the combination of **theoretical model development, numerical simulation, and experimental validation**. Among many research initiatives, the ITV is part of the **Cluster of Excellence "The Fuel Science Center"** and has funding from an **"Advanced Grant"** of the European Research Council won by Prof. Pitsch. In addition, several **national and international collaborations** exist with industrial and academic partners (Melbourne University, Politecnico di Milano, Princeton University, Stanford University, etc.).

### About the topic

The numerical group of ITV engages in many different kinds of simulations from DNS, LES to RANS approaches intending to gain deep insights into the underlying physics of reacting flows that occur in relevant energy conversion systems. The research interest focuses on reducing pollutant emissions, assessing and designing next-generation fuels (hydrogen, ammonia, bio-fuels, and e-fuels), flame-turbulence interactions, and simulation of reactive sprays, the simulation-based design and optimization of burners, etc. Our approach comprises system-scale simulations and only parts of the energy conversion process to allow for rigorous model development and validation.

### About your role

As a research assistant, you will be actively involved in ongoing research projects. This can include:

- ◇ DNS of turbulent fields and development of closure models of turbulence
- ◇ DNS of combustion instabilities and theoretical characterization
- ◇ Development of LES and RANS models
- ◇ Development of in-house codes (CIAO, FlameMaster) for high-fidelity predictive simulations
- ◇ Scientific contributions to national and international conferences
- ◇ Supervision of bachelor and master theses
- ◇ Assisting in teaching various classes

### About you

You are a good fit for our team if you:

- ◇ Hold an M.Sc. Degree (or equivalent) in Mechanical or Computational Engineering, Physics, or a related field with excellent track-record
- ◇ Share our enthusiasm about fluid dynamics, thermodynamics, and combustion
- ◇ Are interested in programming and numerical modeling
- ◇ Have excellent oral and written English communication skills (German is a plus)
- ◇ Show good interpersonal communication skills within our international team

- ◇ Are self-motivated and are willing to advance your knowledge and skills

### What we can offer

The full-time position is to be filled as soon as possible and is limited to 2 years. A fixed-term employment for a total of at least 3 years with the goal of a doctorate is planned. The fixed-term employment is within the framework of the fixed-term possibilities of the Wissenschaftszeitvertragsgesetz. The position gives the opportunity to do a doctorate. The salary is based on [remuneration group 13 TV-L \(EG 13 TV-L\)](#) of the pay scale for the German public sector.

RWTH is certified as a family-friendly university. We particularly want to promote [gender equality and diversity](#) at RWTH Aachen University and therefore look forward to applications from underrepresented groups. Applications from severely disabled people are expressly welcome.

The [RWTH Doctoral Academy](#) offers doctoral students a wide range of transversal skills development courses, as well as coaching and advising for systematic career planning. RWTH offers a wide range of health, counseling, and prevention services (e.g., [university sports](#)) as part of a university health management program. Employees have the opportunity to purchase a job ticket for public transport.

International applicants can find information on visa requirements etc. on [RWTH's webpage for International Doctoral Candidates](#). Our [language center](#) regularly offers German language courses.

**Please send your application, including a cover letter, CV, university transcripts, and proof of requested qualifications, to [jobs@itv.rwth-aachen.de](mailto:jobs@itv.rwth-aachen.de)**