

ForWind – Center for Wind Energy Research of the Universities Oldenburg, Hannover and Bremen, offers a PhD position at the Institute of Physics of the Carl von Ossietzky University Oldenburg in the research group Computational Fluid Dynamics for Wind Physics („CWP“) as a

Doctoral candidate (m/f/d)

(salary according to E13 TV-L, 75 %)

starting immediately and limited project-related preliminary until 31.01.2024. The focus of this research project lies on

CFD simulations with synthetic turbulent inflow and its interaction with wind turbines.

Project description: This research project is part of a joint research project treating the extended modeling and uncertainty examination of atmospheric wind fields. Nowadays wind turbine rotors reach enormous dimensions and, thus, the rotor blades get more flexible. They cover a large area of the incoming wind field. The wind fields can be generated synthetically by models which should match the real conditions as accurately as possible. Such synthetic wind fields can then enter a numerical simulation. In the context of this PhD position, these synthetic wind fields and their interaction with wind turbines with flexible rotor blades shall be investigated by means of fluid structure interaction simulations. An important characteristic in wind fields is the so-called intermittency. This means that the wind fields exhibit non-Gaussian statistics which implies a higher probability for extreme events. In this context, wind fields without and with the intermittency characteristic (like the so-called Continuous Time Random Walk models) shall be implemented as inflow into the Computational Fluid Dynamics (CFD) simulations and compared. In this context extensive investigations shall be made with CFD methods and an inhouse fluid structure interaction routine developed at University Oldenburg in OpenFOAM.

Recruitment requirement is an academic university degree (Master or Diploma) in Physics, Meteorology, Mathematics, Aerospace Engineering, Engineering Sciences or comparable.

Relevant knowledge in the field of fluid dynamics and turbulent flows, as well as the programming and simulation of turbulent flows in CFD are a prerequisite. Furthermore, we expect proficient mathematical skills towards statistical analysis or stochastic processes. Familiarity with wind energy, aerodynamics, fluid structure interaction simulations, the CFD code OpenFOAM and programming skills in C++ are advantageous. Very good communication skills and proficient English skills (written and spoken) are expected as well as the ability to work collaboratively.

The University of Oldenburg is dedicated to increasing the percentage of female employees in the field of science. Therefore, female candidates are strongly encouraged to apply. In accordance to § 21 Section 3 NHG female candidates with equal qualifications will be preferentially considered. Applicants with disabilities will be given preference in case of equal qualification.

Please send your complete application including

- cover letter describing your motivation for pursuing a PhD
 - curriculum vitae
 - a research statement (about one page) describing your research interest and the explicit relation to this PhD position
 - BSc and MSc grade transcripts and certificates
 - qualified certificates of employment/letters of recommendation or at least references
- in a single pdf-document preferably by email to Jun.-Prof. Dr. Laura Lukassen, ForWind – Zentrum für Windenergieforschung, Universität Oldenburg, Küpkersweg 70, 26129 Oldenburg, **bewerbung.cwp@uni-oldenburg.de** using the subject “CFD_TurbFlow” by **14.03.2021**.