Research Assistant / Doctoral Student (f/m/d)

Job description:

The Institute of Fluid Mechanics (ISTM) at Karlsruhe Institute of Technology (KIT) seeks a highly-motivated Research Assistant / Ph.D. candidate to perform cutting-edge research on turbulent high-Reynolds-number flows, with particular focus on the interaction between turbulent superstructures and other vortical structures in turbulent flows. The research is part of the Priority Programme „Turbulent Superstructures“ (SPP 1881) funded by the German Research Foundation (DFG). The Priority Programme gathers Mathematicians, Physicists and Engineers from top German universities and tackles different aspects of the role, modelling and formation of turbulent superstructures, with the long-term goal of improving our ability to control and predict turbulent flows. In close collaboration with other project partners the origin and interaction of turbulent superstructures with other scales of motion is to be studied in turbulent channels at high Reynolds numbers (Re). Direct Numerical Simulations (DNS) are used to perform numerical experiments, in which a turbulent channel at high Re is let evolve naturally or purposely altered. The alteration is designed to enhance or hinder mechanisms through which turbulent superstructures form or interact with other scales of the flow. The obtained data will be analysed via innovative post-processing techniques developed within the SPP and at ISTM, ranging from Lagrangian approaches, through modal decompositions to the analysis of scale interactions via the Anisotropic Generalised Kolmogorov Equations.

You are expected to independently carry out HPC simulations, the related post-processing and physical data interpretation. You collaborate with all partners within the Priority Programme, disseminate your findings in international journals and conferences, co-supervise student theses in your research field and engage in teaching at ISTM.

We offer a friendly, motivated and highly qualified team, within which you can independently perform novel, exciting research encompassing a very broad methodological spectrum and with the potential for international impact and visibility.

Qualification:

You must have a university degree (Master/Diplom) in mechanical engineering or physics with a focus on fluid mechanics and have completed your studies with very good results. You have very good knowledge in the field of theoretical and computational fluid mechanics. Ideally, you have already gained experience with the simulation of turbulent flows and their statistical evaluation. You have very good knowledge of higher mathematics and see the cooperation with mathematicians within this project as an exciting challenge. Besides the professional qualification, strong commitment, independent and self-responsible working including fluent verbal and written English skills are expected.
We offer: We offer an attractive and modern workplace with access to excellent facilities of KIT, diverse and responsible tasks, a wide scope of advanced training options, supplementary pension with the VBL (Pension Authority for Employees in the Public Service Sector), flexible working time models, a job ticket (BW) allowance, and a cafeteria/canteen.

Salary: The remuneration occurs on the basis of the wage agreement of the civil service in TV-L, E13.

Institute: Institute of Fluid Mechanics (ISTM)

Contract duration: limited to 36 months

Starting date: As soon as possible

Application up to: November 25th, 2019

Contact person in line-management: For further information, please contact Dr. Davide Gatti, email: davide.gatti@kit.edu.

Application: Interested candidates are asked to send a motivation letter, curriculum vitae, transcripts of grades and contact information for at least one academic reference in a single PDF file electronically to Dr. Davide Gatti, email: davide.gatti@kit.edu.

Applications are accepted in both English and German.

We prefer to balance the number of employees (f/m/d). Therefore we kindly ask female applicants to apply for this job.

If qualified, severely disabled persons will be preferred.

KIT is certified as a family-friendly university (familienfreundliche Hochschule) and offers part-time employment, leaves for family-related reasons, dual career options, and individual coaching for family-work balance.