Technische Universität Dresden (TUD), as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences, and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology, and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation, and active participation. For TUD, diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements, and productivity to the success of the whole institution.

The Boysen-TU Dresden Research Training Group for young researchers from Engineering, Social Sciences, Arts, and Humanities, co-financed by the Friedrich and Elisabeth Boysen Foundation and the Technische Universität Dresden, is offering a doctoral scholarship\(^1\) from January 1, 2023, for a maximum of 3 years, subject to available funding. The interdisciplinary Research Training Group, in what is its fourth generation, is conducting research on the overarching topic **Hydrogen Economy – Strategic element of a future GreenGas deal**. It consists of four clusters. Cluster F: Impact H\(_2\) green combines five sub-projects (SP). A suitable person (m/f/x) is being sought to work on the topic **SP F4: Monitoring concept "Sustainability of H\(_2\) production"**. The Chair of Software Technology at the Faculty of Computer Science at TU Dresden is responsible for the supervision. The interdisciplinary supervision takes place in the common rooms of the Research Training Group.

**Abstract:** This subproject evaluates, with the help of metrics on simulation specifications, the sustainability of regional energy networks. Metrics are measures that determine values at inputs and outputs of the simulated energy network, for example minimum input quantities or output quantities. Such energy metrics allow questions to be asked about the efficiency of the Renewable Energy (RE) used and to be answered by the simulation. Building on this, sustainability metrics allow questions about the sustainability of an energy network to be asked and answered. The aim is to use the metrics to make sustainable decisions on the implementation of regional energy grids, in particular on how the use of RE can be increased. In doing so, the impacts of the other projects of the Cluster are recorded and at the same time the energy and sustainability metrics are fed back to them. The "Autarchic Energy Park" is used as a reference example. For simulation, acausal (undirected) simulation languages such as contextual Modelica, Dymola, and contextual Petri nets based on them are used. These languages make it possible for the first time to model regional energy grids with variable system structures, which is extremely important for the sustainable deployment of RE and goes beyond the state of the art in research.

Applicants are expected to have an above-average academic degree in energy informatics, computer science, or mechanical engineering, and a high degree of willingness to engage in interdisciplinary work and research. Accepting the scholarship obliges your presence in the research group's offices in Dresden on three fixed core days per week. Participation in the college's teaching program is compulsory (24 ETCS in 3 years).

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university and offers a Dual Career opportunity.

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\(^1\) The amount of the scholarship is based on the basic amount according to DFG criteria: [https://www.dfg.de/foerderung/programme/einzelfoerderung/forschungsstipendien/stipendienrechner/](https://www.dfg.de/foerderung/programme/einzelfoerderung/forschungsstipendien/stipendienrechner/)
Service. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please send your compelling application including a letter of motivation, curriculum vitae, copies of academic certificates or other relevant qualifications (language certificates, further training), and a max. 10-page sample text (e.g., final thesis, term paper, or publication) until November 21, 2022 ( stamped arrival date of the university central mail service applies) with the subject “SP F4: Monitoring concept “Sustainability of H2 production”, preferably via the SecureMail Portal of the TU Dresden https://securemail.tu-dresden.de as one PDF document to anna.martius@tu-dresden.de. Alternatively, applications can also be sent to the following address: TU Dresden, Boysen-TU Dresden-Graduiertenkolleg, Frau Dr. Anna Martius, Helmholtzstr. 10, 01069 Dresden, Germany. Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: https://tu-dresden.de/karriere/datenschutzhinweis