

The Argelander professorship Integrated System Modeling for Sustainability Transitions, chaired by Jun.-Prof. Dr. Wolfram Barfuss at the Rheinische-Friedrich-Wilhelms-Universität Bonn, Germany, is inviting applications for a

## Position as a doctoral researcher (f/m/x), (TVL-E13, 65%)

How can people act together to pursue sustainable paths? We reshape human-environment modeling to identify critical leverage points for sustainability transitions. Cooperation at scale is vital for a sustainable future, yet unresolved. Specifically, how can large collectives of intelligent actors, coupled with dynamic environments, seek ways to improve their joint well-being? To move forward with this challenge, we develop mathematical models of collective learning, bridging ideas from complex systems science, multi-agent reinforcement learning, and social-ecological resilience.

We seek a motivated and talented individual to join our young, strongly evolving, interdisciplinary team as a doctoral researcher in modeling human-environment systems. The position is for three years with the possibility of extension.

### Your tasks:

- Develop, implement, and analyze mathematical models of human-environment interactions.
- Review scientific literature to identify relevant frameworks, theories, models, and data sources.
- Contribute to the group's modeling framework for studying human-environment systems.
- Present research findings at conferences, workshops, and other relevant events.
- Prepare and publish high-quality research papers in peer-reviewed journals.
- Contribute to teaching human-environment modeling and the supervision of student projects.
- Obtain a doctoral degree.

### Your Profile:

- Master's degree (or equivalent) in a relevant field such as Sustainability Science, Economics, Computer Science, Physics, Mathematics, or a related discipline.
- Strong background in quantitative research methods and mathematical modeling.
- Proficiency in scientific computing with Python.
- Willingness to engage in concepts from sustainability science.
- Prior knowledge of reinforcement learning in multi-agent systems is desirable.
- Excellent written and oral communication skills in English.
- Ability to work independently and as part of a team.
- Strong organizational and time management skills.

### What we offer:

- Cutting-edge research opportunities in a stimulating and collaborative environment.
- Access to state-of-the-art research facilities and resources.
- Freedom to shape your research project.
- Supportive supervision from experienced researchers.
- Competitive salary and possibility for a contract extension.
- Opportunities for professional development and networking.
- A family-friendly university that promotes diversity and equal opportunities.

### Application Process:

Interested candidates are invited to submit their application, including a cover letter, curriculum vitae, academic transcripts, and contact information for two references (they will only be contacted for short-listed candidates). Please also include a concise research statement outlining your research interests, relevant experience, and motivation for pursuing a doctoral degree in modeling human-environment systems in our group.

The application deadline is 17. Sep. 2023. Applications (compiled into one PDF) should be emailed to [wbarfuss@uni-bonn.de](mailto:wbarfuss@uni-bonn.de) with the subject line "Doctoral Position Application - Modeling Human-Environment Systems". For further information or to discuss the position, please also contact Jun.-Prof. Dr. Wolfram Barfuss by email: [wbarfuss@uni-bonn.de](mailto:wbarfuss@uni-bonn.de).

The University of Bonn is an equal-opportunity employer committed to diversity and inclusion and places particular emphasis on fostering career opportunities for women. We encourage applications from individuals of all backgrounds and experiences. Qualified women are strongly encouraged to apply. The university is a certified family-friendly institution and supports its employees in balancing work and family life.

**Join our team and make a difference in contributing to a sustainable future by reshaping human-environment modeling!**