Job Advertisement 2024-20 *12.11.2024*

At the Leibniz Institute of Atmospheric Physics (IAP), a **part-time position (75%)** in the Department “Radar Remote Sensing” is available as

PhD Student, Mesosphere and lower thermosphere Dynamics with physics-informed machine learning approaches and SIMONe (f/m/d)

The position is initially offered for **three years** with a **starting date in the first half of 2025**. The salary is according to class EG 13 TV-L (approx. 40 000 €/year). The fixed-term contract is based on § 2 WissZeitVG.

Join a pioneering PhD program at the forefront of atmospheric science, where cutting-edge radar technology and machine learning meet to unlock the mysteries of mesoscale dynamics in the mesosphere and lower thermosphere!

About SIMONe:

SIMONe (Spread Spectrum Interferometric Multistatic Meteor Radar Observing Network) is an innovative radar technology developed by our Institute, in collaboration with the MIT Haystack Observatory and the University of Tromsø. SIMONe uses advanced radar methodologies, such as multistatic, spread-spectrum, MIMO (Multiple-Input Multiple-Output), and compressed sensing, to measure winds in the mesosphere and lower thermosphere (MLT) through meteor trail observations. This unique design allows for easy installation and scalability, leading to the deployment of seven SIMONe systems globally—three in South America, two in the USA, and two in Europe. By capturing 4D wind fields across a wide range of scales, SIMONe provides unprecedented insights into mesoscale dynamics, further enhanced by integrating state-of-the-art, physics-informed machine learning methods.

Your Tasks:

As a PhD candidate in this project, you will be instrumental in advancing our understanding of mesoscale dynamics within the MLT region. Key responsibilities include:

- Statistical Characterization of MLT Dynamics: Use advanced machine learning techniques to capture higher-order atmospheric dynamics and quantify their influence across high, middle, and low latitudes.

- Integrating Data and Physics: Develop machine learning models that combine radar data with physical principles to accurately capture mesoscale dynamics in the MLT region.
- Validation with High-Resolution Simulations: Cross-verify SIMONe measurements using high-resolution model simulations.
- Potential Use of UA-ICON Simulations: Leverage high-resolution nested simulations from the UA-ICON atmospheric model for process understanding.

Your Qualifications / Experience:

- A Master's degree (or equivalent) in physics, engineering, mathematics or a related field.
- Strong enthusiasm for applying machine learning to atmospheric dynamics.
- Independent work style, strong communication skills, and a proactive approach to research challenges.
- Proficiency in English for collaboration and documentation.

What we offer:

- A vibrant research environment near the beautiful Baltic Sea (German Riviera).
- Access to modern research facilities and tools, alongside collaborative opportunities in international settings.
- Flexible working hours and options for remote work (where applicable).
- Competitive benefits including participation in the German public sector pension scheme (VBL).
- Support for work-life balance, including family-friendly policies and services.
- An opportunity to be part of a renowned institute within the Leibniz Association, known for its commitment to equality, flexibility, and professional growth.

Who we are: Our institute's mission is to advance the scientific understanding of the mesosphere and lower thermosphere, focusing on atmospheric physics, instrumentation, data analysis, and modeling. As part of the Leibniz Association, we prioritize research that addresses pressing societal challenges, such as climate change, while fostering an inclusive and supportive work environment. Our partnerships include collaborations with the University of Rostock and other research institutions worldwide, ensuring a strong network for academic exchange and development.

Interested?

Please send your application as one pdf with complete, informative documents, including

- motivational letter
- curriculum vitae
- diploma with indication of final grade
- copy of certificates, possibly testimonies and references

under indication of the keyword: ***2024-20***

to: personal@iap-kborn.de

Please send applications by **January 15, 2025.** Applications beyond this date will be considered until the position is filled. Unfortunately, application and travel costs cannot be covered by the state of Mecklenburg-Vorpommern. By submitting your application, you consent to the processing of your personal data for the purpose of the application process.

Equal Opportunities: We pursue a family-friendly personnel policy, and strive to increase the proportion of women. Qualified women are therefore explicitly encouraged to apply. People with disabilities are given preference if they have the same qualifications.

Contact: For further information, please contact Prof. Dr. Jorge Chau (chau@iap-kborn.de) or inform yourself under www.iap-kborn.de.