The Ernst Ruska-Centre (ER-C) for Microscopy and Spectroscopy with Electrons at Forschungszentrum Jülich is a national facility dedicated to research at the frontiers of electron microscopy and materials science. In cooperation with the RWTH Aachen University it hosts up-to-date infrastructure including worldwide unique aberration-corrected electron microscopes. The moreSTEM research Group lead by Prof. Dr. Knut Müller-Caspary at ER-C is looking for a team member to perform cutting-edge subatomic-resolution electron microscopy on 2D materials.

The moreSTEM research team at ER-C is looking for a

**2019D-188 - PhD position in the field of atomic-scale electrical characterisation by electron microscopy**

**Your Job:**
- You will perform experiments with state-of-the-art aberration-corrected low-voltage STEM machines equipped with ultrafast cameras to record 4D STEM data of several 2D materials.
- By accompanying simulations, you will study the effects of bonding across prominent defects, especially with respect to detectability as a function of electron dose and residual aberrations.
- In close cooperation with research groups at the RWTH Aachen University who perform the electrical transport measurements, you will investigate the materials of choice, such as graphene, hBN, transition metal dichalcogenides (e.g. WSe2 MoS2).
- You will conduct in-situ biasing experiments at 2D materials heterostructure devices to study the distribution of electric fields and charges under external bias.
- Besides the advancement the high-precision mapping of atomic-scale charges brings to the field of nanotechnology, your work will enhance the general understanding of the electrical properties in low-dimensional systems significantly from the fundamental physics point of view.
- This PhD is supposed to play a key role in the methodological development of the

We look forward to receiving your application via our [Online-Recruitment-System](http://www.fz-juelich.de/)!  

**Questions about the vacancy?**  
Contact us by mentioning the reference number 2019D-188: career@fz-juelich.de  
Please note that for technical reasons we cannot accept applications via email.  
www.fz-juelich.de
very recent momentum-resolved STEM technique, which has the potential to overcome several long-standing challenges in solid-state physics via the principle of multidimensionality, i.e., the combination of real- and diffraction space details at unprecedented resolution and sampling.

**Your Profile:**
- Master degree in physics
- A background and strong interest in solid-state theory, and/or experiences in electron microscopy are desirable
- Programming experience in, e.g., Matlab
- Experience with 2D materials are beneficial
- Fluent command of written and spoken English
- Most importantly: enthusiasm to explore uncharted territory, develop and follow your own ideas
- Ability to work autonomously in close interaction within a team

**Our Offer:**
- Outstanding computing facilities and partly unique aberration-corrected transmission electron microscopes equipped with ultrafast detectors of the latest generation.
- A highly motivated working group as part of an international and interdisciplinary working environment at one of Europe’s largest research establishments.
- Continuous scientific mentoring by your scientific advisor as well as feedback and expertise in the multiple facets of electron microscopy and materials science.
- Opportunity of participating in (international) conferences and project meetings.
- Participation in overarching seminars including certificate.
- Further development of your personal strengths, e.g. via a comprehensive further training programme
- Pay in line with 50 % of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund), higher payment may be possible upon skills.
- Information on employment as a PhD student at Forschungszentrum Jülich can be found here (http://www.fz-juelich.de/gp/Careers_Docs)
- Usually a contract for the duration of 3 years

Further information on the project is available at: https://www.fz-juelich.de/er-c/EN/

Forschungszentrum Jülich promotes equal opportunities and diversity in its employment relations.
We also welcome applications from disabled persons.