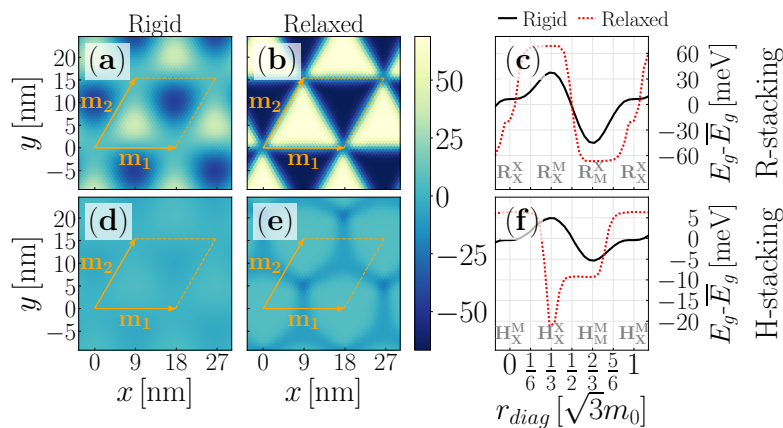


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## PhD position at University of Hamburg in the group “Theory of nanoscopic systems”

The PhD degree will be obtained either in the physics or chemistry department, depending on the candidate’s background. The successful applicant will join the group of [Prof. Bester](#) and work on a research project concerned with excitonic effects in 2D materials. The candidate will use our ab-initio approach [1] which combines DFT and configuration interaction to calculate the exciton ( $X$ ), charged excitons ( $X^-$ ,  $X^+$ ), biexciton ( $XX$ ) properties and their mutual interaction. The candidate will make use of our latest 2D-atomic effective pseudopotentials [2] and our recent force-field [3] (see Figure) to address moiré structures with up to 20,000 atoms. The position is within the vibrant [SPP 2244 consortium](#).



We expect a Master’s degree or equivalent in physics, chemistry or related disciplines, preferably in the fields of theoretical condensed matter research or quantum chemistry. A candidate experienced with one or more of the following topics will be given priority:

- DFT
- Theoretical Quantum Chemistry
- Optical Properties, spectroscopy, semiconductors.

Applications including a CV, a documentation of academic record, a brief description of the Master thesis project, a motivation letter should be sent in a single pdf file to: e-mail: [angelina.dell@uni-hamburg.de](mailto:angelina.dell@uni-hamburg.de) with subject: SPP 2244 application

The position is available now.

[1] *First-principles many-body theory for charged and neutral excitations: Trion fine structure splitting in transition metal dichalcogenides*, A. Torche and G. Bester, Phys. Rev. B **100**, 201403(R) (2019).

[2] P. Han and G. Bester, manuscript in preparation. [3] *Accurate force-field methodology capturing atomic reconstructions in transition metal dichalcogenide moiré system*, C. E. M. Nielsen, M. da Cruz, A. Torche and G. Bester Phys. Rev. B **108**, 045402 (2023).

The University of Hamburg seeks to increase the number of women in those areas, where they are underrepresented and therefore explicitly encourages women to apply.