Institution:

Nicolaus Copernicus University in Toruń, Poland
Faculty of Physics, Astronomy and Informatics

Research field: Condensed Matter Physics

Project title: Twistronics - research on new quantum simulators

(grant within National Science Centre Poland)

Scholarship amount: 2000 PLN/month

Position: 3 positions for MSc students

Posted: 02.08.2022

Application deadline: 05.09.2022

Position starts earliest on: 1.10.2022

Offer description:

The students will work with the project leader dr Pawel Potasz on electronic properties of moire superlattices which are new quantum simulators. The project involves analysis of current experimental results and designing magnetic and correlated phases in topologically trivial and nontrivial flat bands. The student will focus first on implementation of single particle models, real space tight-binding model and a reciprocal space model and next on analysis of many-body physics, within mean-field self-consistent Hartree-Fock calculations and beyond.

Selection process/Required documents:

• Curriculum vitae

• statement of the candidate's research interests, experience, and skills (in English)

• min. 1 letter of reference

Skills/Qualifications:

1. Fundamental knowledge about quantum physics.
2. Skills in computer programming (C, python, Matlab, or Fortran)
3. Communication skills and ability for working in a team
4. Basic experience in mean-field theory and self-consistent calculations will be an advantage

Benefits:
Each position is funded for 24 months. We offer a scholarship of 2000 PLN per month. In addition, the position has a generous funding available for conferences and research visits.

Offer Requirements:

• BSc in physics or related sciences

• English in speaking and writing (basic)

Additional information: Documents should be submitted to dr Pawel Potasz: ppotasz@umk.pl before 5th of September 2022.