

Instituto de Ciencias de Materiales de Madrid (ICMM-CSIC)  
Instituto de Estructura de la Materia (IEM-CSIC)

## Two contracts for PhD thesis work on Superconducting and Topological Phases in Moiré Systems

### Project description

The discovery of correlated insulating states, anomalous Hall ferromagnetism and superconductivity in twisted bilayer graphene has had a strong impact on the condensed matter community. The thesis will theoretically investigate these novel quantum materials, i.e., twisted bilayer and trilayer graphene and related moiré van der Waals heterostructures, and their superconducting, ferromagnetic and topological phases.

### Required qualifications

Prospective candidates must have a degree in physics or a related field and must be highly motivated to work on sophisticated numerical and theoretical concepts. They should show a strong interest in method development and solving technical challenges and bring along good communication skills in English. Experience in solid-state or condensed-matter physics, and/or programming skills (Fortran, Mathematica, Matlab, Python, ...) are advantageous.

### Our offer

**Position 1:** The position is available in October 2021 and is funded as part of a MICINN grant. Payment will be based on the Collective Agreement for the Civil Service of the Comunidad Autónoma de Madrid.

**Position 2:** The position is available in September 2022 and is funded by a FPI-contract associated to a MICINN grant. Applications start in September/October 2021 on the official platform of MICINN.

CSIC strives to raise the proportion of women in its workforce and explicitly encourages applications from qualified women. Applications from disabled persons with essentially the same qualifications will be given preference.

### Application

Please send your CV, letter of motivation (max. 1 page) and contact details of two potential references to Tobias Stauber (tobias.stauber@csic.es) or José González (j.gonzalez@csic.es) by October 1<sup>st</sup>, 2021. Further information on our research groups is available at [www.icmm.es/tstauber](http://www.icmm.es/tstauber), [www.fsmfc.iem.cfmac.csic.es/personal/jose](http://www.fsmfc.iem.cfmac.csic.es/personal/jose) .

### Links on research topic:

<https://www.madrimasd.org/notiweb/noticias/proponen-una-explicacion-superconductividad-en-bicapas-grafeno-giradas>

<https://www.madrimasd.org/notiweb/noticias/cientificos-csic-proponen-una-explicacion-propiedad-superconductor-grafeno>