

PhD studentship (Full-time)

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| Institution | Xi'an Jiaotong-Liverpool University, China |
| School | School of Mathematics and Physics..... |
| Supervisors | Principal supervisor: Dr Bing-Sui Lu (XJTLU) Co-supervisor: Professor Mattheus (Thijs) Kouwenhoven (XJTLU) Co-supervisor: Professor Simon Hands (UoL) |
| Application Deadline | Open until the position is filled |
| Funding Availability | Funded PhD project (world-wide students) |
| Project Title | Casimir-Polder repulsion induced by a Chern insulator |
| Contact | Please email BingSui.Lu@xjtlu.edu.cn (XJTLU principal supervisor's email address) with a subject line of the PhD project title |

Requirements:

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in Physics (preferably theoretical physics). Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.5 or above, if the first language is not English. This position is open to all qualified candidates irrespective of nationality.

Degree:

The student will be awarded a PhD degree from the University of Liverpool (UK) upon successful completion of the program.

Funding:

The PhD studentship is available for three years subject to satisfactory progress by the student. The award covers tuition fees for three years (currently equivalent to RMB 99,000 per annum) and provides a monthly stipend of 5,000 RMB as a contribution to living expenses. It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. It is a condition of the award that holders of XJTLU PhD scholarships carry out 300-500 hours of teaching assistance work per year. The scholarship holder is expected to carry out the major part of his or her research at XJTLU in Suzhou, China. However, he or she is eligible for a research study visit to the University of Liverpool of up to six months, if this is required by the project.

Project Description:

Imagine pouring a dilute gas of neutral atoms onto a neutral surface. We expect the atoms to fall onto the surface because of gravity's fatal pull. Besides gravitational attraction, another force exists which is the Casimir-Polder force, which dominates over the earth's gravitational pull for typical distances shorter than one micrometer. An important peculiarity of this force is that it is generally attractive, which causes matter to agglomerate. However, attraction can be a severe drawback for applications to compact systems for which we want the atoms to act as (almost) free particles. For our research project, we propose to carry out a theoretical physics investigation into the possibility that the Casimir-Polder interaction can become repulsive for atoms which one can imagine to be rotating about an axis perpendicular to the surface, if the latter is a type of material known as a Chern insulator. If the repulsion is stronger than gravity, the atoms can levitate above the surface.

For more information about doctoral scholarship and PhD programme at Xi'an Jiaotong-Liverpool University (XJTLU): Please visit

<https://www.xjtlu.edu.cn/en/admissions/global/entry-requirements/>

<https://www.xjtlu.edu.cn/en/admissions/global/fees-and-scholarship>

How to Apply:

Interested applicants are advised to email.....@xjtlu.edu.cn (XJTLU principal supervisor's email address) the following documents for initial review and assessment (please put the project title in the subject line).

- CV
- Two reference letters with company/university letterhead
- Personal statement outlining your interest in the position
- Proof of English language proficiency (an IELTS score of 6.5 or above)
- Verified school transcripts in both Chinese and English (for international students, only the English version is required)
- Verified certificates of education qualifications in both Chinese and English (for international students, only the English version is required)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available

Informal enquiries may be addressed to Dr. Bing-Sui Lu (BingSui.Lu @xjtlu.edu.cn), whose personal profile is linked below,

<https://www.xjtlu.edu.cn/en/study/departments/school-of-mathematics-and-physics/physics/department-staff/academic-staff/staff/bingsui-lu>