PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Mathematical Sciences
Supervisors	Primary supervisor: Dr. Hao Yu(Xi'an Jiaotong-Liverpool University) Co-supervisor: Dr. Hem Raj Sharma (University of Liverpool, UK);
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Dynamics of Spintronics and Strongly-Correlated Electron Systems

Requirements:

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in Theoretical Physics or Condensed Matter Physics. Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.5 or above, or an equivalent qualification, 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 80,000 per annum) and provides a monthly stipend of 3500 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 three months, if this is required by the project.

Project Description:

Spin is a quantum mechanical property that arises when the rotational momentum of a particle, in this case an electron, creates a tiny magnetic field. Spin is given a direction, either "up" or "down." Just as the positive or negative values of an

electrical charge can be used to encode data as the **0** and **1** of the binary system, so too can the up and down values of spin. Unlike charge-based data storage, however, spin-based storage does not disappear when the electrical current stops.

This research is aiming to theoretically investigate the coupling of spins and other degrees of freedom and to develop new concepts for manipulation, transport and storage of spins, and their implementation in nanoscale electronic devices and systems.