

## PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Mathematics
Supervisors	Principle supervisor: Dr Hasanjan Sayit (XJTLU, Department of Mathematics) Co-supervisor: Dr...Lin Jiang.....(UoL, Department of EEECS)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Calibration of Option Pricing Models with Fractional Brownian Motion and Jumps
Contact	Please email Hasanjan.Sayit@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..... 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 80,000 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 three months, if this is required by the project.

### **Project Description:**

The project studies option pricing models based on fractional Brownian motion and pure jump levy processes, which exhibit heavy tails and long-range dependence properties that are observed in empirical financial data, and behave very differently from the usual financial models (e.g. exponential Brownian motion) based on Gaussian or Markov processes. Models based on fractional Brownian motion generally admits arbitrage with continuous path trading strategies due to the non-semi-martingale property. However, the proposed models are free from static arbitrage and can be applied in pricing European type options.

The aim of this project is to study calibration problems of model parameters of the proposed models. Since classical statistical tools and calibration methods would break down in the presence of long-range dependence and jumps, it is important to understand how this kind of models behave, how one simulates them, and how one estimates their parameters.

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

<http://www.xjtlu.edu.cn/en/study-with-us/admissions/entry-requirementsA>

<http://www.xjtlu.edu.cn/en/admissions/phd/feescholarships.html>

### **How to Apply:**

Interested applicants are advised to email Hasanjan.Sayit@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 Professor/Dr. (Hasanjan.Sayit@xjtlu.edu.cn), whose personal profile is linked below, <http://www.xjtlu.edu.cn/en/faculty/Hasanjan.Sayit>