

PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of <i>Civil Engineering</i>
Supervisors	Principle supervisor: <i>Xiaonan Tang</i> (Xi'an Jiaotong-Liverpool University) Co-supervisor: <i>Jianguo Zhou</i> (University of Liverpool, UK)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Impact of Mixed-layer Vegetation on Channel Flows 混合层的植被对河道水流影响的研究
Contact	Please email xiao.tang@xjtlu.edu.cn and copy doctoralstudies@xjtlu.edu.cn 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 *Civil Engineering or related fields*. *Previous experiences in numerical modelling would be advantageous*. 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:

Vegetation in natural channels is usually denser in lower layer and sparser in upper layer. For example, in riparian environments or floodplains, shorter vegetation (grasses or shrubs) is submerged, but the taller vegetation (e.g. trees) remains emergent. However, the impact of such mixed layer vegetation on the flow structure is unknown, which is significant to reduce risk of flood and water environment. This proposal is to investigate such vegetated flows via novel flume experiments with the vegetation modelled under various submergences, types and configurations. The detailed flow structure can be studied through measurement of 3D velocity field by ADV (or LDV) and PIV. Then numerical modelling, e.g. 3D RANS or LES, can be used to study for a wide range of scenarios. The research outcome will understand the flow structure of such realistic vegetated flow and provide key dataset for modelling, which will have a wide range of applications on river, hydro-environment engineering, and aquatic environment.

The primary aim is to understand the flow structure of mixed layer vegetation and its impact on velocity and turbulence intensity. The specific objectives:

- 1) Investigate velocity and turbulence characteristics of mixed vegetated flows via experiments;
- 2) Develop various 3D turbulence numerical models with vegetation, validate and extend the models for the study in a wide range of scenarios (e.g. varying flow depth, array and density of vegetation), to provide complete key dataset for analytical model development;
- 3) Develop a new approach of predicting velocity, turbulence intensity, and flow resistance using the results from Objectives 1 & 2.

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

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

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

How to Apply:

Interested applicants are advised to email xiao.tang@xjtlu.edu.cn the following documents and copy doctoralstudies@xjtlu.edu.cn (please put the project title in the subject line).

- CV
- Two reference letters
- Personal statement outlining your interest in the position
- Proof of English language proficiency (an IELTS score of above 6.5 or equivalent) is required
- 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)

Informal enquiries may be addressed to Dr Xiaonan Tang (xiao.tang@xjtlu.edu.cn), whose personal profile is linked below,
<http://academic.xjtlu.edu.cn/civeng/Staff/xiaonan-tang>