PHD SCHOLARSHIP

The School of Civil Engineering at The University of Queensland (Brisbane, Australia) is offering a PhD scholarship for a motivated student to contribute to research. Potential students with an interest in civil engineering or geophysics and electrical engineering are strongly encouraged to apply. The scholarships will be for three years, with possible extension to four years at $27,082 per annum (2018 rate, index annually). The scholarship is open to domestic (Australian and New Zealand) students only.

PROJECT INFORMATION

A new approach for characterizing soil based on electric parameters

The aim of this project is to develop a predictive methodology based on electromagnetic sensors to quantify soil state variables that influence hydraulic and mechanical processes. These processes affect the safety of manmade and natural geo-structures such as dams or embankments. Conventional monitoring methods are outdated and unreliable, reducing our capability of detecting threats to these structures. The development of new and improved methods for determining parameters and characterizing the state of soils has been identified as a key challenge by the geotechnical and geo-environmental community and as a research priority for the coming decades.

The main idea is to take advantages of the frequency dependent dielectric properties of soils using dielectric spectroscopy to understand the hydraulic and mechanical behaviour of soils and to develop innovative and robust monitoring systems.

An important preliminary step is the broadband dielectric characterization of various soils under controlled boundary and initial conditions in the laboratory. This first working step is crucial, as it forms on the one hand the database required for the development of the analysis methods and the investigation of the influence of hydraulic and mechanic state variables on the dielectric response of soils. Laboratory investigations will be conducted in the geotechnical laboratories of the School of Civil Engineering.

QUALIFICATIONS

Candidates must hold a relevant undergraduate or Master’s degree in Geophysics, electrical engineering or physics. Candidates with skills or interest in soil physics or Geotechnics are strongly encouraged to apply.

HOW TO APPLY

Interested candidates should submit their scholarship application on the Application for school-based PhD or MPhil scholarship form, together with your supporting documents on the HDR online application system.

Details on the application for admission and scholarship process can be found at http://www.civil.uq.edu.au/HDR-application-apply.

For further details on the scholarship project, please contact Dr. Thierry Bore or Associate Professor Alexander Scheuermann at t.bore@uq.edu.au or a.scheuermann@uq.edu.au.

Submission due by 1st March 2018