UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT of
CIVIL AND ENVIRONMENTAL ENGINEERING

Ref: FST/SEM/00014/2018

" Mechanical behaviors of track-bed materials at various inclusion (coarse-grain) contents "

by

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Date: **15/03/2018 (THURSDAY)**
Time: **2:30PM – 3:30PM**
Venue: **E11 – 1006**

Abstract

For the French conventional railway lines, a layer, namely interlayer, was created in the substructure mainly by the interpenetration of ballast grains and subgrade soils. The in-situ investigation indicated that the content of coarse grains decreases over depth. In this presentation, the mechanical behaviors of the unsaturated lower part interlayer soil were investigated at six volumetric inclusion contents fv (volumetric ratio of dry coarse grains to the whole sample) by carrying out monotonic and cyclic triaxial tests. The results reveal the existence of a characteristic fv-cha, separating two zones of the variations of mechanical behaviors with different inclusion effects. To verify this observation, X-ray microcomputed tomography (μCT) scans were conducted on as-compacted samples. The results obtained strongly support the existence of fv-cha: when fv ≤ fv-cha, the matrix of fines constitutes the skeleton of the sample, with inclusions floating in it. For this case, the mechanical behaviors are dominated by the fines. By contrast, when fv > fv-cha, the inclusions dominate the skeleton of the sample, thus mainly influencing the mechanical behaviors.

Biography

Dr. Han-Lin Wang is now a research fellow of geotechnical engineering at Hunan University, China. He got the BEng and Ph.D. degrees from Zhejiang University (2011) and (2017), respectively. In 2016, he also worked as a joint Ph.D. candidate for one year at Ecole des Ponts ParisTech (ENPC), France. His research field focuses on TDR technology, geosynthetic-reinforced pile-supported track-bed, mechanical behaviors of track-bed materials and moisture migration in the track-bed. Depending on his research experiences, he has authored 9 scientific journal papers, including 3 papers under review.

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