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Editorial

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Welcome to the third 2022 issue of the *International Journal of Physical Modelling in Geotechnics* (IJPMG). Before introducing the papers in this issue, I would like to express my gratitude to ICE Publishing and to the editorial board of IJPMG for their support over the past 3 years that I have been Editor in Chief of IJMPG. It would be remiss of me not to also acknowledge and thank the broader geotechnical physical modelling community for their continued support of the journal. It is the excellent physical modelling work that you do and communicate through the journal that has led to the steady increase in popularity and impact factor that IJPMG has enjoyed over the past few years.

The four papers in this issue are diverse in terms of their geographical origin – Australia, China, Germany and Canada – but have some common themes, both in terms of the topics that they consider and also in the modelling approach.

Wong *et al*. (2022) consider pipeline uplift, a problem that has received much attention over the past few decades. However, the motivation for this work is somewhat different from that in the majority of the preceding studies, in that the pipelines traverse along onshore active slopes, and that the movement of the slopes leads to the vertical uplift loading. Wong *et al*. (2022) address this problem through a series of large-scale single gravity experiments in a compacted expansive clay using pipeline sections with diameters that are close to the lower bound of the range used in practice. Their work highlights some of the shortcomings in current design practice as the role of tensile resistance (by way of matrix suctions) and strain rate effects are not considered directly.

Li *et al*. (2022a) focus on a very different problem – the efficacy of a towed three-sided rolling compactor in densifying in situ soils and fill materials. The single gravity physical model experiments were conducted at a 1:10 reduced scale in a dry beach sand and utilised a variety of measurement techniques, including miniature cone penetrometer testing, three-dimensional (3D) surface scanning and planar particle image velocimetry. Interpretation of these measurements indicates that density increases are higher in looser sand deposits and extend to 4 m depth (at field scale). Failure mechanisms as the three-sided roller traverses the sand are seen to be complex and include both vertical and lateral soil movements, depending on when 'impact' with the soil occurs. Li *et al*. (2022a) consider that this may result in a non-uniform compaction of the near-surface soil, which may require additional corrective measures.

Staying with compaction, Nagula *et al*. (2022) report data from a series of single gravity experiments in which a model vibrator was used to densify sand and the densification assessed by way of cone penetrometer tests. The frequency at which the unbalanced mass in the vibrator was rotated about the axis was varied so as to arrive at an optimised frequency. An interesting aspect of the work of Nagula *et al*. (2022) was their success in matching the experimental results with those obtained from 3D coupled Eulerian–Lagrangian simulations using the hypoplastic model, something that I am sure many readers will be curious to learn more about.

Finally, the work of Li *et al*. (2022b) considers the geotechnical capacity of a rather novel foundation type that is considered by the authors as an option for wind turbines in mountainous regions. The foundation is a conical concrete shell that is cast in situ and subsequently filled with the material excavated to form the conical geometry. Li *et al*. (2022b) measured the lateral bearing capacity of the foundation through a series of single gravity experiments at a reduced scale of approximately 1:50 in a medium dense sand. These results are compared with a limit equilibrium method proposed by the authors, which is shown to conservatively calculate the measured capacities by between 8% and 17%.

I trust that you enjoy reading these papers, and as I complete my editorial role with the journal, I would like to welcome Professor Xianfeng Ma of Tongji University, Shanghai as Deputy Editor and Acting Editor in Chief. I wish Xianfeng and the IJPMG editorial board continued success for the journal.

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