39Hh IROAST SEMINAR



Prof. Dongforg MANG University of Combridge, UK

"Meshfree Modelling of Ocean Waves, _andslides and Soil-Water Interactions"

<u>Abstract</u>

Traditionally, the numerical solution of continuum mechanics problems requires the decomposition of the domain with computational mesh. Once the domain boundary changes, the mesh should be updated to adapt to the new boundary. This talk will show several examples of applying the modern meshfree computational methods to civil engineering problems involving large deformations at the boundary, such as nonlinear ocean waves, sediment transport and landslides. The meshfree methods are ideal for this type of problems, because they inherently avoid the mesh distortion. In civil engineering, the strong interactions between soil and water are often crucial in the phenomena like the seepage induced slope instability and wave runup on porous beaches. The necessity of considering the dynamic coupling between the soil and water phases will be explained as well as the importance of satisfying both the mass and momentum conservation principles. The meshfree methods included in this talk are the Smoothed Particle Hydrodynamics (SPH) and Material Point Method (MPM), which have been increasingly used in scientific computing.



📞 096-342-3316 📩 szk-kiko@kumamoto-u.ac.jp 💻 https://iroast.kumamoto-u.ac.jp