

# Beyond FEA: An Introduction to Evolving Numerical Methods for Challenging Engineering Problems

Finite Element Analysis is a well-established technology with a huge range of applications, but general purpose methods can struggle to solve some classes of problem including crack propagation and large deformation processes. Research into more efficient solutions for such problems has developed a range of numerical approaches, and some of the most effective methods have recently been introduced to commercially-available packages. Whilst these methods have produced impressive results on demonstration problems, their use has yet to become widespread due to lack of familiarity, understanding and confidence within the engineering community.

## Agenda

10:00 Coffee & Registration

10:30 Chairman's Welcome and Introduction: *Louise Wright, NPL & Brian Mille, Wilde Analysis Ltd.*

**Discontinuous Galerkin Finite Element Methods for Multi-Physics Problems:** *Paul Houston, University of Nottingham*

**Beyond the Finite Element Method in Geotechnical Analysis:** *Ronald Brinkgreve, PLAXIS*

**The Finite Discrete Element Method and the Assessment of Structures:** *Carl Brookes, Ramboll Ltd.*

**Smoothed Particle Hydrodynamics and its Application to Solid Mechanics Problems:** *Tom deVuyst, Cranfield University*

Title TBA: *Louise Wright, NPL*

**A Global Energy Method to Predict the Stability and Shapes of Crack Propagation in Irradiated Graphite Components using XFEM:** *Owen Booler, AMEC*

Title TBA: *Adam Towse, Assystem Ltd.*

**Equilibrium Elements for the Safe Limit Analysis of Plates:** *Angus Ramsay, Ramsay Maunder Associates*

16:20 Summary and Closing Remarks

16:40 Close