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PLASTICITY AND FRACTURE OF MATERIALS AND JOINTS IN LARGE-SCALE ANALYSES

MIGUEL COSTAS[*], DAVID MORIN [*]
AND BORJA ERICE[†]

[*] NTNU, Department of Structural Engineering
Richard Birkelands vei 1A 7034 Trondheim, Norway
miguel.costas@ntnu.no

[†] Mondragón Unibersitatea
Loramendi 4 20500 Mondragón, Spain
berice@mondragon.edu

ABSTRACT

Large-scale numerical analyses are essential for the design, assessment, and optimisation of engineering structures across many industrial sectors. Reliable predictions require accurate modelling of nonlinear material and joint behaviour, including plasticity, damage, and fracture.

This mini-symposium aims to highlight recent advances in computational and experimental–numerical methods for modelling materials and joints in large finite element analyses, where accuracy, robustness, and efficiency must be balanced.

Contributions are invited on constitutive modelling, failure criteria, validation strategies, and industrial applications, particularly in transportation sectors such as aerospace, automotive, naval, offshore, and railway engineering. Papers addressing joining technologies, including mechanical fastening, welding, adhesive bonding, and hybrid joints, are also welcome.

The session also seeks to bring together international researchers, engineers, and industrial practitioners to promote discussion, knowledge transfer, and future collaborations.