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Enriched mixed finite element models for dynamic analysis of continuous and fractured porous media

M. Komijani, R. Gracie

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Highlights (for review)

- Presentation of improved methods for the simulation of the dynamics of continuous and discontinuous porous media.
- Presentation of the first application of the Phantom Node Method (PNM) to model fractures in porous media.
- Illustration that GFEM enrichment with suitable trigonometric functions can significantly reduce the spurious oscillations which appear in FEM simulations of wave phenomena in porous media.
- Presentation of a mixed Generalized Finite Element Method coupled with a PNM (PNM-GFEMM) to more accurately model wave propagation in fractured porous media.
- Presentation of an Augmented Lagrangian Method to implement contact and stick-slip friction between fracture surfaces, in the context of the PNM and the PNM-GFEM-M.

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