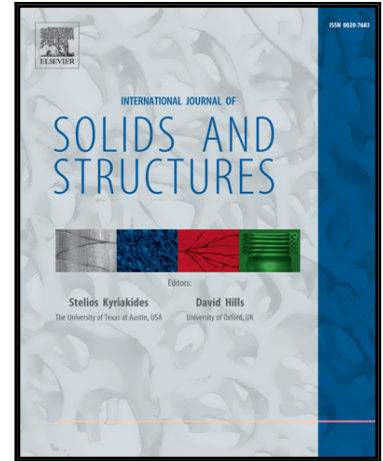


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A coupled fluid-solid SPH approach to modelling flow through deformable porous media

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## Highlights

- A new coupled fluid-solid approach to modelling flow through deformable porous media is presented.
- Both solid and fluid phases are evolved in two different Lagrangian discretisations following their own governing equations that are linked through several laws of physics.
- Fully coupled behaviour of fluid and solid is achieved within the two-phase SPH framework by considering the influences of void fractions and solid matrix deformation on the governing equations
- The proposed two-phase SPH model is suitable for modelling long physical time problems owing to the robust and stable explicit ISPH model adopted for the fluid phase.
- The proposed approach is capable of modelling complex problems such as internal erosion due to seepage flow or surface erosion that are challenging to traditional approaches.

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