New Trends in Computational Poromechanics at Finite Strain

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ABSTRACT

Recent developments in the computational geomechanics field are developed in a finite strain configuration. This allows the researchers to ensure the accuracy when large deformations occur. However, it is not free of a strong mathematical work, which becomes even more difficult when several phases and their interactions are involved. Besides the aforementioned difficulties, these approaches allow to reproduce reliably the desired geomechanical application as well as a large number of biomechanical problems.

In this Minisymposium we expect to discuss the new trends that we can find in the last years about the finite strain formulation of the poromechanics problem. The three main lines are: (i) the employment of meshfree methodologies such as Optimal Transportation Meshfree [1], Material Point Method [2] or Smooth Particle Hydrodynamics; (ii) the use of the complete formulations, involving inertial terms [1]; and (iii) the stabilization of the proposed formulations [2].

The interest in the natural sciences field lies in the resolution of challenging geo-environmental engineering problems such as landslides, liquefaction and other geotechnical problems in addition to bi-phase tissues applications as well. All of them present large displacement of the solid particles and the important contribution of the fluid and air phases.

**REFERENCES**

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