14th World Congress on Computational Mechanics (WCCM XIV)
8th European Congress on Computational Methods in Applied Science and Engineering (ECCOMAS 2020)
July 19–24, 2019, Paris, France

COMPUTATIONAL MODELLING OF INTERNAL EROSION (TRACK NUMBER 1600)

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Key words: Internal erosion, Earth dams, Dikes and levees

ABSTRACT

Soil erosion due to the interaction with seepage flow is strongly correlated to failure occurrences, or serious damage, of water retaining structures such as dams, dikes, cofferdams, etc. [1]. Under the collective noun of *internal erosion*, this class of mass transport phenomena includes a number of fundamental erosion mechanisms (suffusion, backward erosion, tangential erosion, etc.) and patterns (e.g., piping erosion) [2]. In response to the pressing demand from services in charge of the safety of water retaining structures, an active community of scientists and engineers is involved in the development of experimental and analytical models, as well as computational tools, for internal erosion [3]. The mini-symposium will mainly focus on new numerical schemes suited for this class of phenomena, and on the numerical implementation of existing analytical-based models. Contributions such as case studies or back-analyses of internal erosion experiments, *via* computational tools, are also welcomed. We expect that the mini-symposium will cover a wide range of numerical approaches, including from CFD, for the modelling of internal erosion processes at the scale of the water retaining structure (e.g. FEM, FDM, FVM), down to the fundamental mechanisms at the REV- or grain scale (e.g. DEM, LBM, SPH, MPM).

REFERENCES

[1] Fell, R. and Fry, J.-J. (eds.), *Internal erosion of dams and their foundations*, Taylor & Francis, 2007.

[2] Bonelli, S. (ed.), *Erosion of geomaterials*, Wiley, 2013.

[3] Bonelli, S., Jommy, C. and Sterpi, D. (eds.), *Internal erosion of earthdams, dikes and levees*, Springer, 2019.