# DEM – CFD coupled simulations of a reservoir landslide

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## ABSTRACT

The formulation of a coupled 3D Distinct Element Method (DEM) – Computational Fluid Dynamics (CFD) code is first succintly presented [1]. Sedimentation of a single spherical particle for which an analytical solution is available is used to validate the code and work out the minimum mesh - particle size ratio. Second, simulations of granular batch sedimentation for which experimental data are available showcase the predictive capability of the model.
Then, simulations of a reservoir landslide are presented. The Vajont landslide involved a large mass of rock splashing at high speed into the reservoir which in turn generated a high impulse water that overtopped the dam and swept away the downstream village. The rock slide from onset to impact with the reservoir and the subsequent generation of the impulse wave were simulated. Coarse graining is employed to reduce computation runtime. The main results of quasi 3D analyses in plane strain along two cross-sections representative of the eastern and western slope sectors are presented [2]. The results show to be in broad agreement with the available recorded observations.

**Keywords:** Vajont landslide, impulse wave, rapid rockslide, coupled DEM-CFD

## REFERENCES

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