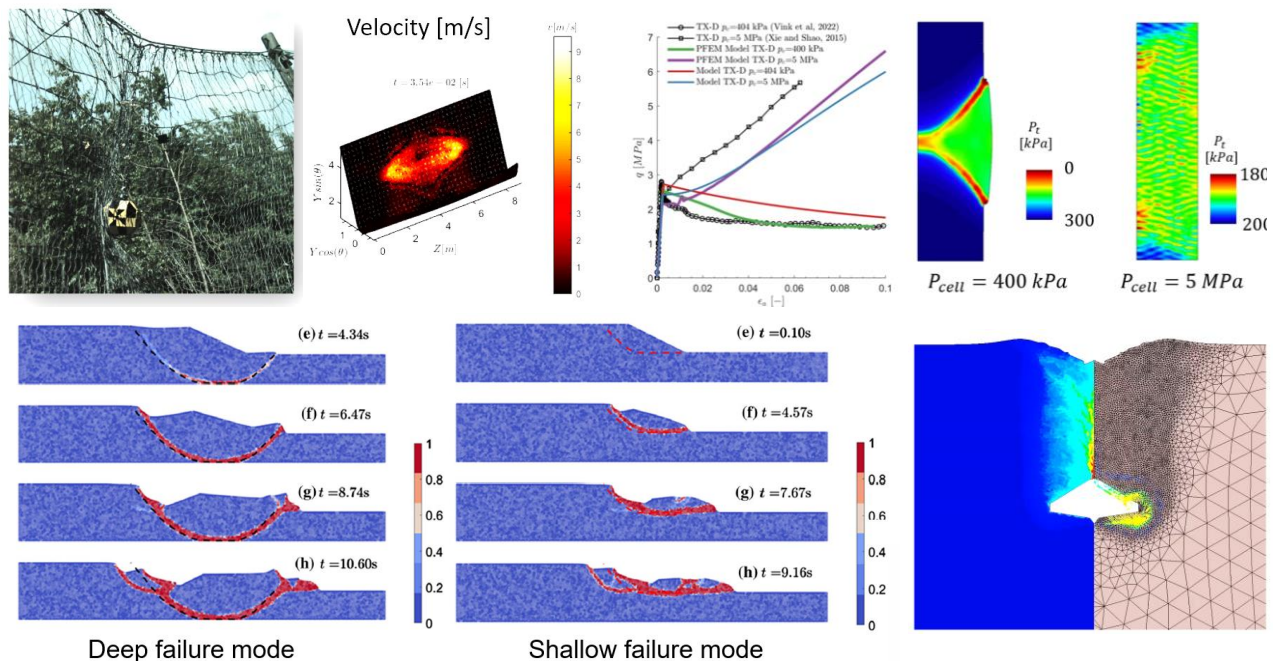




Advanced Particulate Methods applied to Engineering Geology applications

Dr. Matteo Oryem Ciantia [web-link](#)

With the goal to help design strategies and technical solutions for in situ and soil ground investigations, safe and economic operations to mitigate geohazards induced severe weather conditions enhanced by global warming, Matteo's research mission is to advance the understanding of geomaterials failure in extreme conditions. It leverages cutting-edge multiscale and multiphase computational modelling, experimental, and field-testing research to better understand how geomaterials fail when subjected to coupled thermal-hydro-chemo-mechanical effects. In this presentation Matteo will show how the Particle Finite Element Method and the Discrete Element Method and can be used efficiently and rigorously to address problems such as CPTu in crushable sands, dynamic response of rockfall barriers and crack/fault propagation in soft carbonate rocks.



Tuesday 10th May 2022, 12:30 – 13:30 / Aula Marchetti Building U1

Matteo is a Senior Lecturer of Soil Mechanics and Geotechnical Engineering. He joined the University of Dundee as a Lecturer in August 2017. Prior to this, he held a Junior Research Fellowship at Imperial College for 2 years undertaking independent research focussed on the use of the Discrete Element Method (DEM) to study the installation of displacement piles jacked in sand from a micromechanical perspective. Before that Matteo was postdoctoral researcher at UPC Barcelona (2013-2015) working on DEM modelling of grain crushing and its effect on insitu cone penetration tests (CPT). Matteo obtained his PhD from Politecnico di Milano in 2013 on the hydro-chemo-mechanical coupled behaviour of soft carbonate rocks. With more than 35 journal papers and over 50 international conference peer reviewed papers his background is broad and covers experimental (including physical modelling and field testing), theoretical (constitutive modelling) and numerical (FEM, DEM and PFEM) geomechanics of carbonate rocks and of crushable soils. Matteo's research contributions to date were internationally recognised in 2019 when he received the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) Bright Spark Award and in 2021 when he received the International Association for Computer Methods and Advances in Geomechanics (IACMAG) Promising Investigator Contest (ePIC) Nominee Award.