



香港岩土及岩土環境工程專業協會
ASSOCIATION OF GEOTECHNICAL &
GEOENVIRONMENTAL SPECIALISTS (HONG KONG)

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ANNOUNCEMENT

AGS (HK) Technical Seminar

Multiresolution Modeling of Multiphase Geophysical Flows: Turbulence, Irregular Boulders, and Woody Debris in Hazard Mitigation

by

Prof. Yong KONG

(Chengdu University of Technology, The State Key Laboratory of Geohazard Prevention and Geoenvironment Protection)

Date : Thursday, 26 February 2026

Time : 18:30 – 19:30 (Hong Kong Time)

Venue : The webinar will be conducted through Zoom.

Successful applicants will be informed by emails with a Zoom's link to the webinar. Participants should arrange for their own device with a stable network environment to join the webinar.

Enquiry : agshk.org@gmail.com

Fee : Free of charge

Registration : <https://www.ags-hk.org/event-details/multiresolution-modeling-of-multiphase-geophysical-flows-turbulence-irregular-boulders-and-woody-debris-in-hazard-mit>

Please register by 18:30 on 26 February 2026. Successful applicants will receive webinar details after registration. CPD certificate will be sent to the attendees, who attended more than 80% of the webinar time, within 2 weeks after the webinar.

Book Prize : Professionals under 35 years of age are encouraged to submit a Book Prize Report (max. 500 words) on webinars and site visits arranged by AGS (HK).

Contributors to successful Book Prize Reports will be awarded a Book Prize that comprises of a book "Geology of Site Investigation Boreholes in Hong Kong" written by Chris Fletcher, and a coupon of HK\$500 for Eslite Spectrum (誠品生活) or equivalent. The successful Book Prize Report will also be published on the AGS (HK) website to showcase your accomplishment.

Prior to report submission, please refer to the "The AGS Book Prize Reports – Assessment Framework"* on the AGS (HK) website. You may submit your Book Prize Report to our assessors by uploading the report file through the AGS (HK) website at <https://www.ags-hk.org/book-prize>. Should you have any questions, please contact us at agshk@meinhardt.com.hk.

*Link to the AGS Book Prize Reports – Assessment Framework:

https://www.ags-hk.org/files/ugd/521a4c_b94496034732484687441cf4ed4d0bf9.pdf



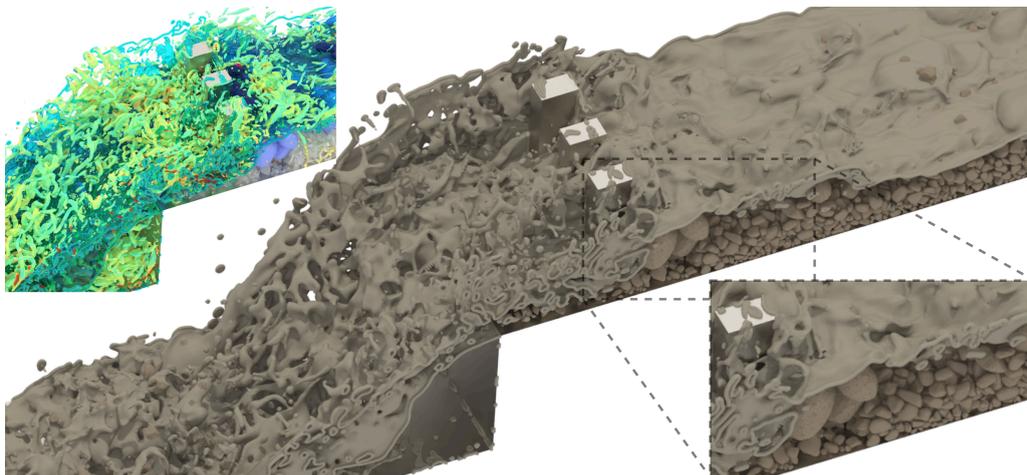
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Synopsis:

Geophysical flows such as debris flows, avalanches and floods pose significant geohazards in mountainous areas, likely worsened by impending global climate change. The multi-phase and multi-scale nature of these flows shapes their initiation, transportation, erosion, impact and runout dynamics, and makes them challenging to predict and model. We present a multiresolution framework for modeling multiphase geophysical flows by coupling computational fluid dynamics with the discrete element method. Four modules, resolved, unresolved and mixed-resolved-unresolved, and GPU-accelerated CFD-DEM, have been developed to model multiscale and multiphase particulate systems at varying resolutions. For instance, the resolved module probes turbulent fluid-arbitrary-shaped solids-structure interactions in geophysical flows, enabling high-fidelity modeling of debris flows carrying driftwood and boulders against forests. Shapes of driftwood, boulders, and trees are captured from reduced-scale samples using X-ray CT techniques, and the CFD and DEM models utilizing the immersed boundary (IB) and signed distance field (SDF) methods, respectively. Conversely, the unresolved module simulates debris flows interacting with erodible beds across full-scale terrains, facilitating comprehensive modeling of debris flows, avalanches and floods impacting various countermeasures. As a result, the multiresolution CFD-DEM framework provides a unified treatment of multiscale and multiphase particulate systems, offering a promising tool for understanding and predicting geophysical flow dynamics and mitigations. Notably, this framework represents a pioneering advancement in geohazard modeling and holds promise for applications in diverse fields such as nature, engineering, and industry involving multiscale, multiphase particulate systems.



About the Speaker:

Dr. Kong Yong is a National High-Level Young Talent Professor at a State Key Laboratory within Chengdu University of Technology and serves as an Editor for *Landslides*. He received his Ph.D. in 2020 from The Hong Kong University of Science and Technology, after which he worked as a Research Assistant Professor at The Hong Kong Polytechnic University. Dr. Kong is a dedicated researcher specializing in computational geohazards and geomechanics. He presents a multiresolution CFD-DEM framework for modeling multiphase and multiphysics particulate systems. The Association of Geohazard Professionals (AGHP) has recognized his research as “revolutionizing engineering design and shaping ongoing research.”