

IGT-Kolloquium

Monday, 25 March 2024

Submarine landslide mechanism and impact on structures: current challenges in Norway

Dr. Quoc Anh Tran, Norwegian University of Science and Technology
17:00 - 17:45 Uhr, ETH Zurich, Hönggerberg, HIL H 35.1

Zoom: <https://ethz.zoom.us/j/3512594738>

In Norway, numerous infrastructures face a considerable risk of submarine landslides, notably in locations like Bjørnafjorden, where plans for a floating bridge with a mooring system anchored to the seabed are underway. A recent geohazards study highlights the vulnerability of these anchors to potential submarine landslides, necessitating robust design to withstand such impacts. However, the lack of reliable tools and design guidelines emphasizes the urgency for the development of an advanced computational tool. This presentation addresses (1) challenges in the design approach for assessing submarine landslide impacts on offshore foundations, (2) introduces a new computational model (coupled Computational Fluid Dynamics – Material Point Method) to overcome current design challenges, (3) validates the model through centrifuge geotechnical modeling, and (4) utilizes the model to enhance understanding of earthquake-induced submarine landslides.

Dr. Quoc Anh Tran's passion lies in pioneering computational methods to model the complex dynamics of landslides. He earned his PhD in Finland, specializing in the simulation of sensitive clay landslides. In 2020, Dr. Tran relocated to Norway, where he currently serves as a researcher at the Norwegian University of Science and Technology. In 2021, he received a Marie Skłodowska-Curie Individual Fellowship under the European Union Horizon 2020 program, leading the project «Submarine landslides and their impacts on offshore infrastructures».

