



SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS1003

7 January 2025

A DCAMM seminar No. 780 will be presented by

Prodromos N. Psarropoulos^{1,2}
Structural & Geotechnical Engineer, BEng, MEng, MSc, PhD

1. Teaching & Research Associate, National Technical University of Athens, Greece
2. Otto Mønstedts Fonds Visiting Professor, Aarhus University, Denmark

The title of the lecture is:

**Offshore Geotechnical Earthquake Engineering:
An emerging multidisciplinary field integrating engineering and science**

Abstract:

Offshore Engineering, being an essential engineering area that focuses on the design, construction, and operation of any infrastructure located in the marine environment, is related to various sectors, such as energy, telecommunications, transportation, coastal development, and shipping. Undoubtedly, the recent discoveries of offshore deposits of natural gas, and more importantly, the global challenge of “green transition”, i.e., the transition from fossil fuels to renewable sources of energy, have already sparked a surge in Offshore Engineering worldwide. One of the key subjects of Offshore Engineering is Geotechnical Engineering which involves the analysis of the seabed characteristics, the design of the foundation or the anchoring system of offshore structures, and the optimal route selection of submarine lifelines, such as cables and pipelines. Nevertheless, in regions characterized by high seismicity, such as the American west coast, the East Asia, and the Mediterranean Sea, the design of an offshore infrastructure is a more challenging task due to the seismic hazard(s) and the associated risk. Apart from the hazard of strong seismic motion and the consequent issues of inertial loading and dynamic soil-foundation-structure interaction, various earthquake-related geohazards, such as seismic-fault ruptures up to the seabed surface, liquefaction of seabed sediments, and/or earthquake-triggered submarine landslides, pose additional threats. Along these lines, the current seminar delves into Offshore Geotechnical Earthquake Engineering, an emerging field that integrates principles from Seismology, Geotechnical Engineering, Structural Engineering and Ocean Engineering to achieve the seismic risk management of offshore infrastructure via the realistic quantitative assessment of the seismic (geo)hazards in offshore environment and the minimization of structural vulnerability and loss. Through real case histories and case studies, it is demonstrated that the safety and resilience of any offshore infrastructure in a seismically active region are directly related to this multidisciplinary field which certainly integrates engineering and science.

DATE:	Friday, 31 January 2025
TIME:	15:00 – 15:45
PLACE:	Building 116, Room 012 DTU, Technical University of Denmark

Danish pastry, coffee and tea will be served 15 minutes before the seminar starts.

All interested persons are invited.

Jan Becker Høgsberg

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