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**Venue: SKEM 601**  
**Date: 24<sup>th</sup> January**  
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**Time: 16:00**

# **Geotechnical properties of core materials of embankment dams from in-situ and laboratory tests: lessons learned from the Italian experience**

## **Synopsis:**

Many embankment dams around the world can represent a potential risk for the downstream areas in the event of uncontrolled release of reservoir water due to earthquake damages. An in-depth understanding of the response of new and existing dams during seismic actions is therefore required. There are many methods available for estimating the seismic performance of earth dams that vary considerably in their degree of sophistication, and can be grossly distinguished in simplified and advanced. A key aspect of advanced analyses methods, especially those involving greater complexity, is the availability of adequate documentation on the static properties of dams, which are necessary to define the initial state of stress at the start of the dynamic analysis, as well as their dynamic properties. Experimental data on geotechnical (static and dynamic) properties of earth dams are seldom available either for the core or rockfill zone. This is because the boring and undisturbed sampling in the core zone is generally not allowed for concerns regarding the potential problems of leakage, whereas the size of the rockfill material makes laboratory testing challenging.

This talk presents the results of experimental investigations carried out on the core materials of several Italian zoned dams. Static and dynamic properties were determined through in-situ and laboratory tests, these latter conducted on undisturbed samples retrieved from the core. Special attention is devoted to the shear wave velocity profile and dynamic properties expressed in terms of normalized modulus reduction and damping ratio curves. The applicability of predictive relations, such as the well-known Vucetic and Dobry (1991) or Darendeli (2001), is also discussed.

## **Presenter's Bio:**

Giuseppe Lanzo graduated in Hydraulic Engineering in November 1988 and obtained his Ph.D. in Geotechnical Engineering in February 1995, both from the University of Rome "La Sapienza". In 1995 he served as post-doctoral fellow at the Civil and Environmental Engineering Department of the University of California at Los Angeles (UCLA). Lecturer from 1997 to 2001 and, since November 2001, Associate Professor at the Department of Structural and Geotechnical Engineering of the Sapienza University of Rome. His primary research interests are in geotechnical earthquake engineering, with emphases on earthquake ground motion characterization, cyclic characterization of soils by means of laboratory tests, seismic response analysis and microzonation, advanced numerical methods for the seismic analysis of dams.