ΔΙΑΛΕΞΗ ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Την **Πέμπτη 20 Νοεμβρίου 2014, στις 3μμ**, στην **Αίθουσα Εκδηλώσεων της Σχολής Πολιτικών Μηχανικών Ε.Μ.Π.** (Ζωγράφου), θα δοθεί διάλεξη του:

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Grenoble Institut Polytechnique, 3SR Lab (Sols Solides Structures Risques)
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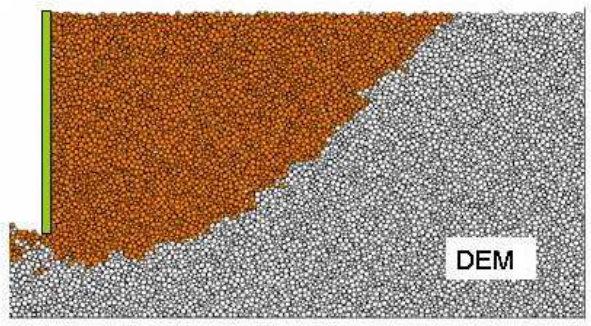
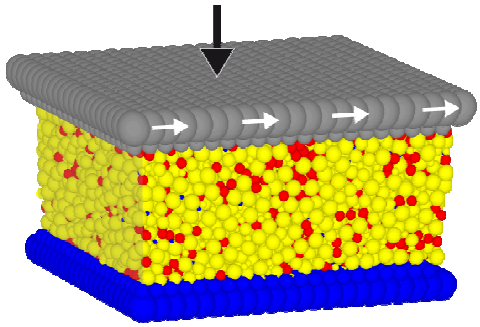
με θέμα:

DISCRETE ELEMENT MODELLING IN GEOMECHANICS

(***Χρήση Μεθόδου Διακριτών Στοιχείων στη Γεωμηχανική*** **)**





Περίληψη:
While the finite element method has been extensively applied since several decades in geomechanics and geotechnics, it is now recognised that it presents limitations to describe:

(i) the granular discrete features of geomaterials (soils, rocks, concretes) for which a continuum mechanics framework is not pertinent,
(ii) failure and post-failure behaviours as bifurcation problems.

On the other hand, molecular dynamics is today considered as a very powerful numerical method in modern physics and corresponds to what is usually called "direct numerical simulations". The application of molecular dynamics to granular materials has given rise to a class of numerical methods called "**discrete element methods**" (DEM). This talk will present two applications of DEM in geomechanics in relation with:

(a) unsaturated granular media, showing that the classical expression of the effective stress tensor in unsaturated granular materials does not consider the essential tensorial nature of the capillary stress, and
(b) failure and post-failure behaviours in numerical granular specimens, showing how the second order work criterion appears as the proper tool to describe failure states by divergence instabilities with localised or diffuse failure modes.