SS 2015

STATIK DYNAMIK

Study Course: **Recent Advances in Numerical Modeling and Simulation**
BI: Wahlfach W35 | CompEng: Optional Course

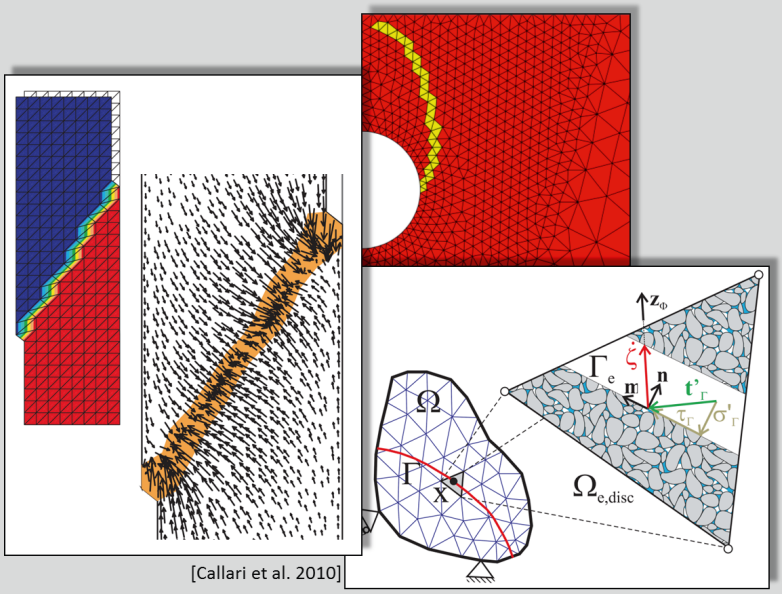
ENHANCED FINITE ELEMENTS WITH EMBEDDED DISCONTINUITIES FOR THE MODELING OF DISPLACEMENT AND FLUID-FLOW JUMPS

Prof. Carlo Callari
University of Molise, Italy

9. June 2015
16:00 – 18:00
IC 03/112

Outline of the lecture

- Background: analysis and numerical simulation of strain localization; loss of ellipticity and mesh dependency.
- Analysis of strong discontinuities in elasto-plastic solids. Strong discontinuities in dilatant plasticity.
- Embedding strong discontinuities as local enhancements in finite elements. Static condensation and discontinuity propagation algorithm.
- Numerical simulation of strain localization in a plane-strain compression test: indifference to mesh size and alignment; comparison with standard FEM.
- Strong discontinuities in multi-phase porous media: analysis; enhanced finite element formulation; plane-strain compression test with localization-induced desaturation
- Simulation of strain localization induced by shallow tunneling



[Callari et al. 2010]