



COLLABORATIVE RESEARCH CENTER 837

## INTERACTION MODELING IN MECHANIZED TUNNELING

RUB

# Standard Finite Element and Particle Methods Lagrangian-Lagrangian & Lagrangian-Eulerian methods

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**22.11.2010 – 12:30 h – IA 6/21**

The simulation of problems involving complex topological changes, requires the use of advanced techniques in order to allow tracking correctly the changes in the geometry.

The use of Lagrangian particle methods, such as the PFEM allows a natural coupling with existing FE approaches and as such provides a very natural way for dealing with problems that can not be treated in other ways. Interestingly both surface coupled problems and volume-coupled problems can be treated by combining state of the art FE with the PFEM.



Present talk will present some applications based on the coupling between PFEM and Eulerian fluids. In presenting such applications we will discuss the challenges encountered and the design decisions made in organizing the Kratos code to deal with them. An attempt will be made to keep such discussion general for the cases in which the methods identified have a broader range of application.

**Guests are sincerely welcome!**