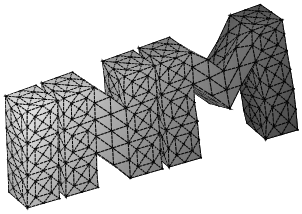
Technische Universität Graz

8. Workshop on

Fast Boundary Element Methods in Industrial Applications

Söllerhaus, 30.9.–3.10.2010

U. Langer, O. Steinbach, W. L. Wendland (eds.)



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Iterative coupling of DEM–BEM regions with an overlapping FEM zone

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One of the characteristics of the numerical simulation in geotechnical engineering is that nonlinear/discontinuous behaviour is concentrated on small portions of the total domain. It is not very efficient to use volume based methods for the analysis of the whole domain. On the other hand a discretisation of this domain into distinct elements is also inefficient because the zone of interest, where discontinuous behaviour occurs, is quite small.
The aim of the current work is to develop a simulation methodology that allows the solution of multiregion elastostatic problems using different numerical methods (BEM/FEM/DEM), coupled iteratively.
During this talk an iterative algorithm for coupling two or more BEM subdomains will be outlined and serve as a base for coupling static BEM with a dynamic DEM code. To achieve this a FEM overlapping area has been adopted in order to simplify the whole procedure.