

Multiscale and adaptive PUM for fracture and heterogeneous media

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Partition of unity methods including related methods like the XFEM and GFEM gained more and more attention during the last years. They enable the mesh independent approximation of non-smooth displacement or strain fields and thus are ideal for the simulation of fracture problems and heterogeneous structures. Error controlled and adaptive computations using PUM and related methods become more important for these applications to obtain reliable results and reduce the numerical effort. Multiscale techniques are necessary to capture small scale features that have strong influences on large scale structures especially in the context of fracture mechanics and heterogeneities. This minisymposium addresses the following topics:

- PUM / XFEM / GFEM for cracks and / or heterogeneities
- multiscale techniques for fracture mechanics and heterogeneous structures
- error analysis for PUM, XFEM and GFEM
- adaptivity and efficiency
- 3D and large scale problems
- numerical issues concerning the PUM, XFEM and GFEM