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GCCE Seminar:
The Extended
Finite Element Method (XFEM)

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18th November 2022, 10:00 – 11.30 at
AT01098 in Rechbauerstraße 12, 8010 Graz

Many phenomena in engineering and natural sciences involve field quantities (displacements, velocities, pressure etc.) which locally feature jumps, kinks, or singularities. Examples are cracks in fracture mechanics and material interfaces in two-phase flows. The classical FEM relies on tailored meshes for the approximation of these non-smooth fields, i.e. element edges must align with the discontinuities and mesh refinements are needed near singularities. Such meshes are not easily provided, in particular in moving interface problems. In contrast, the XFEM employs simple, often structured meshes and the non-smooth solutions are considered by special enrichment functions. The method is applied in solid mechanics (fracture, bio mechanics) and fluid mechanics (two-phase flows, fluid-structure interaction, free-surface flows). The XFEM received significant attention in the academic and industrial community resulting in several dedicated books and overview papers. In this presentation, an overview and introduction to the XFEM is given.

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All the interested are kindly invited and we hope to see you there.