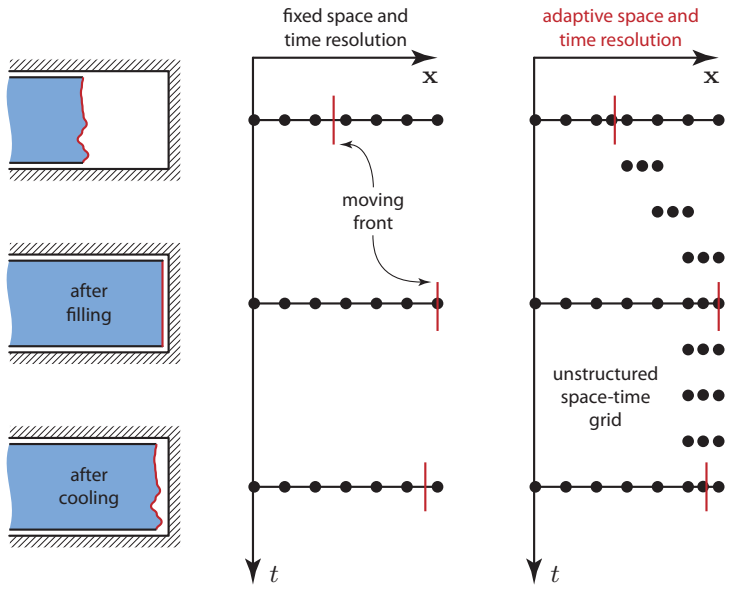
Chair for Computational Analysis of Technical Systems

RWTH AACHEN UNIVERSITY

Doctoral Position

in Adaptive Mesh Refinement in Space-time Finite Element Meshes

Many application areas in process and material engineering require the modelling and simulation of moving phase interfaces. The filling phase in injection moulding or high-pressure die casting can serve as examples. The main aim of the current project is the development and implementation of an adaptive refinement scheme in space, but particularly also in time, in the context of a space-time finite element discretization. Compared to conventional methods that use separate 3D-grids in space and 1D-grids in time successively, the aim is to refine adaptively in time based on 4D-space-time grids. This approach will allow for local refinement in areas that require increased accuracy. This means that different parts of the computational domain use varying time-step sizes. It is to be expected that such an approach can improve the accuracy of the solution by an order of magnitude at constant mesh resolution.



Your profile: Requirement for this position is a diploma or master's degree in CES, engineering, applied mathematics, physics or a similar subject with a superior academic record. Practical programming experience in Fortran or C as well as with parallelization (MPI or OpenMP) are of advantage. Familiarity with UNIX operating system would be ideal. We expect you to contribute to general tasks at the institute, such as teaching and advising master or project theses.

Our offer: The candidate will be employed as a regular employee and must meet required personal qualifications. This is a full-time position with salary according to civil service pay scale TV-L E 13 (`www.cats.rwth-aachen.de/jobs/bat`). The expected appointment period is up to five years, with an initial appointment for one year. Applications are being reviewed now.

Contact : Marek Behr · Tel +49 241 80 99900 · `office@cats.rwth-aachen.de`

Starting date: by mutual agreement, preferably Summer 2014

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