

## Vortragsankündigung

Am **Dienstag, den 21.05.2019**, hält **um 17:00 Uhr**

Christoph Lehrenfeld  
(Universität Göttingen)

einen Gastvortrag über das Thema

### **Unfitted space-time finite element methods for PDEs on evolving geometries**

Der Vortrag findet im **Raum 1431** in **Gebäude 33** statt.

#### **Vortragszusammenfassung**

Many applications of simulation science involve complex and evolving geometries with possibly strong deformations and topology changes during the evolution. In the context of finite element methods most often a “fitted” characterization is used where a parametric description in terms of a computational mesh is available. An alternative approach is based on the idea of separating the computational mesh and the geometry description, resulting in geometrically “unfitted” methods, which allow for a very flexible handling of geometries. On a (typically simple) background mesh a basis discretization is defined. Only afterwards, according to the separately defined geometry this discretization is adapted to the geometrical information. This approach allows to handle complex and possibly time-dependent geometries without the need for complex and time consuming mesh generation or re-meshing. In the recent years finite element methods based on this methodology, geometrically unfitted finite element methods, have drawn more and more attention. Despite its advantages unfitted discretizations, often also called cut-cell methods, give rise to new problems. One major issue in the design and realization of higher order unfitted finite element methods is the problem of accurate and stable numerical integration on level set domains. To tackle this problem we combine a high order geometry approximation based on isoparametric mappings with a discontinuous-in-time space-time finite element formulation. In this talk we introduce the method, discuss implementational aspects and a priori error estimates and present numerical results.

**Alle Interessierten sind dazu herzlich eingeladen.**