## Recent advances of the DoD cut cell stabilization method for hyperbolic systems

## Abstract

Cartesian cut cells allow efficient mesh generation at the cost of loss of control over cell sizes and shapes. Numerical schemes for hyperbolic equations based on cut cells and relying on explicit time stepping encounter the small cell problem: Since cells can be arbitrarily small, the constraint on the time step size also becomes arbitrarily small, rendering the whole scheme practically unfeasible.

A remedy for this is presented by the Domain of Dependence stabilization method: A standard discontinuous Galerkin scheme is extended with appropriate penalty terms to prevent overshoots on small cells and to pass the correct information to downwind neighbor elements. We will discuss recent advances for the DoD method, in particular an extension to hyperbolic systems on two dimensional elements.