Applying Unfitted Discontinuous Galerkin to Time Dependent Problems

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Unfitted Discontinuous Galerkin (UDG) is a new discretization scheme for problems in complex domains. It was developed for elliptic PDEs as a combination of Unfitted Finite Elements and Discontinuous Galerkin methods. It allows a relatively small number of unknowns while still providing a good approximation of the geometrical shape of the domain.

In this presentation we apply UDG to time dependent problems in complex domains. We will show the discretization for the instationary convection-diffusion problem. Numerical results for an artificial complex domain and second order are shown. Full order of convergence is obtained for the space as well as for the time discretization.

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