



## DK Talk announcement

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**"Hybridization of Discontinuous Galerkin Finite Element Methods  
with Application to Convection Dominated Problems  
and Domain Decomposition"**

Discontinuous Galerkin methods have attracted significant interest in the past, in particular for convection dominated problems, as they allow a generalization of stabilized finite volume methods to higher order. One of the drawbacks of DG methods is that they typically have "enlarged stencils", i.e., the system matrices resulting from the discretization are substantially less sparse than that of standard finite element methods, and hence the assembling and solution of the resulting linear systems becomes more expensive. These disadvantages can however be overcome by "hybridization", which is a well established technique for mixed finite element methods.

After a short introduction to the interior penalty DG method, we derive a corresponding hybrid formulation and demonstrate how the resulting finite element scheme can be applied to convection-dominated problems. We then show that hybridization can further be utilized for a flexible discretization of interface problems and domain decomposition. The theoretical results are illustrated by numerical experiments.