

Talk announcement

Bogdan Radu

(TU Darmstadt)

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A second order multipoint flux mixed finite element method on hybrid meshes

We consider the numerical approximation of subsurface flow problems by a mixed finite element method. Following ideas of Wheeler and Yotov, we utilize a mass-lumping strategy that allows us to circumvent the saddle point structure of the underlying variational problem by local elimination of the flux variables leading to a Poisson-type problem for the pressure only. We present a convergence analysis, which allows us to obtain order optimal second order approximations. The theoretical results will be illustrated by numerical tests which demonstrate the efficiency of the method.