

Talk announcement

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Tuesday, Nov 16, 2021

15:30, S3 048

Dual-Primal Isogeometric Tearing and Interconnecting (IETI) Methods for the Stokes problem

In this talk, we discuss the discretization Stokes equations using multi-patch Isogeometric Analysis. We consider the Stokes equations in its mixed formulation, which has saddle point structure. Well-posedness of the (discretized) Stokes system is usually shown by means of Brezzi's theorem. Besides the conditions that carry over from the (well studied) continuous case, there is one condition that has to be verified separately for the discretized problem: the inf-sup condition. For discretizations with single-patch Isogeometric Analysis, the inf-sup condition has already been shown for several discretizations. We base our considerations on the isogeometric Taylor-Hood element and its analysis by Bressan and Sangalli. In the talk we will see, how inf-sup results for single-patch case can be carried over to the multi-patch case. We will rediscover that the inf-sup constant heavily depends on the global geometry. Then, we will discuss the efficient solution of the problem by means of a domain decomposition method, namely the IETI method. We will be very careful to avoid the global inf-sup constant. The numerical experiments confirm that we succeeded with this attempt.