

# $C^1$ -smooth geometrically continuous isogeometric functions on volumetric two-patch domains: dimension and basis

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Recently, the classical notion of geometric continuity experiences intense interest, due to its novel applications in isogeometric analysis [1]. More precisely, when constructing smooth isogeometric discretizations on multi-patch geometries, one needs it to derive constructions that provide smoothness across the interfaces.

The smooth isogeometric discretizations form the space of geometrically continuous functions on multi-patch domains. We investigate the dimension and constructions of locally supported basis functions. Related results for bilinear two- and multi-patch domains were published recently [2, 3], including explicit formulas for basis functions and numerical experiments indicating optimal approximation power. These have been extended to the more general class of “analysis-suitable”  $G^1$  multi-patch parameterizations [4, 5], while maintaining the optimal approximation properties.

In this talk we extend these results to the trivariate case. In particular, we focus on volumetric two-patch domains and identify classes of parameterizations that are potentially well suited for defining smooth isogeometric discretizations.

**Joint work with:** Bert Jüttler, Mario Kapl, Angelos Mantzaflaris.

## References

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