Construction of C^2 -smooth isogeometric spline spaces for planar multi-patch geometries

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In this talk, we present a framework for the construction of C^2 -smooth isogeometric spline spaces [1, 2] for a specific class of planar multi-patch geometries, called bilinear-like G^2 multi-patch geometries. This class of geometries includes the subclass of bilinear multi-patch parameterizations and is characterized by the property to have the same kinds of connectivity functions along the patch interfaces as the bilinear parameterizations. The C^2 -smooth isogeometric spaces are generated as the linear span of three different types of basis functions called patch, edge and vertex functions corresponding to the single patches, edges and vertices of the multipatch domain. The construction of the single functions is simple, and is based on solving small systems of linear equations and/or on using simple explicit formulas. In addition, all basis functions possess a small local support, can be uniformly generated for all possible multi-patch configurations, and are well-conditioned. The functions can be used as test functions to solve sixth order partial differential equations.

Joint work with: Mario Kapl.

References

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