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ISOGEOMETRIC SPLINE TECHNIQUES ON COMPLEX GEOMETRIES

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ABSTRACT

Isogeometric analysis aims at bridging the gap between computer-aided design and traditional finite element analysis to achieve efficient design-through-analysis procedures. It directly utilizes in analysis the spline basis that describes geometries in CAD systems, thus preserving the exact geometry in analysis. The high-order smoothness of splines on simple geometries facilitates the development of more accurate, stable and robust numerical schemes in various applications such as contact problems, fluid-structure interaction, electromagnetism, and so forth.

However, there remain many challenging problems to be addressed in utilizing complex geometries in isogeometric analysis. The purpose of this minisymposium is to bring together experts in computational geometry and analysis to discuss the latest advancement on spline techniques that work for complex geometries, specific topics including but not limited to: spline methods using unstructured quadrilateral and/or hexahedral meshes, subdivision surfaces/volumes, smooth multi-patch methods, analysis-suitable Boolean operations, immersed methods, spline manifolds, and local refinement on complex geometries. In addition to theoretical study, the minisymposium also welcomes related presentations on industry applications and software development.