

ISOGEOMETRIC ANALYSIS OF THIN STRUCTURES

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ABSTRACT

The concept of isogeometric analysis (IGA) has had an especially great impact in the field of thin structures, i.e., shells, plates and beams. The high continuity properties of isogeometric discretizations allowed for a variety of novel, highly efficient shell formulations, like rotation-free Kirchhoff-Love shells and hierarchic formulations for Reissner-Mindlin and solid shells, which show significant advantages over well-established shell formulations within traditional finite element methods. At the same time, shell analysis allows for the realization of the isogeometric paradigm, i.e., performing structural analysis directly on CAD geometries, which typically are surface models. Today, isogeometric shell analysis is already used in industrial applications, e.g. in the automotive industry. The efficient treatment of complex CAD geometries with multiple trimmed patches is a key aspect here and represents still a vital field of active research. Besides shells, a variety of novel and efficient formulations for plates and beams have been developed over the years, taking advantage of isogeometric discretizations.

The proposed mini-symposium invites all contributions from the field of isogeometric analysis of thin structures, both from method development and application. Typical topics are expected to be, but not restricted to:

- Isogeometric discretizations for shells, plates, membranes, beams, rods and cables
- Locking and un-locking in isogeometric structural elements
- Patch coupling
- Analysis of trimmed surfaces
- Coupling with solids and fluids
- CAD integration
- Industrial applications