IGA FOR THIN STRUCTURES

BASTIAN OESTERLE[*], JOSEF KIENDL[†],
HUGO M. VERHELST[‡] AND WOLFGANG DORNISCH[††]

[*] Hamburg University of Technology, Institute for Structural Analysis
Denickestr. 17, 21073 Hamburg, Germany
bastian.oesterle@tuhh.de, www.tuhh.de/bs

[†] University of the Bundeswehr Munich, Institute of Engineering Mechanics and Structural Analysis
Werner-Heisenberg-Weg 39, 85577 Neubiberg, Germany
josef.kiendl@unibw.de, https://www.unibw.de/mechanik-und-statik-en/baustatik

[‡] University of Florence, Department of Mathematics and Informatics "U. Dini"
Viale Giovanni Battista Morgagni, 67/a, 50134 Firenze FI, Italy
hugomaarten.verhelst@unifi.it, https://www.dimai.unifi.it/
Delft University of Technology, Department of Matitime and Transport Technology
Mekelweg 2, 2628 CD, Delft, The Netherlands
h.m.verhelst@tudelft.nl, https://www.tudelft.nl/me/over/afdelingen/maritime-and-transport-technology

[††]RPTU Kaiserslautern-Landau, Chair of Applied Mechanics
Gottlieb-Daimler-Str., 67663 Kaiserslautern, Germany
wolfgang.dornisch@mv.rptu.de, https://mv.rptu.de/fgs/ltm

ABSTRACT

In recent years, a vital activity in the scientific field of formulations and discretization methods for thin-walled structures can be observed. The topic has received a major boost with the paradigm of isogeometric analysis. Here, one of the decisive features is the facilitated discretization of problems for which the weak form has a variational index of 2 or larger. This applies, for instance, to the classical Kirchhoff-Love thin shell model, which experienced a renaissance during the last two decades.

The analysis of thin-walled structures, such as trusses, beams, membranes, plates and shells, is one of the most prominent fields of isogeometric analysis, with applications in civil, automotive, aerospace and structural engineering, but also in many of tomorrow's engineering domains such as biomedical, smart structures or soft robotics.

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

- isogeometric discretizations of beam, plate, membrane, single-layer/multi-layer/solid shell formulations,
- integration of CAD and CAE,
- immersed/trimmed/B-Rep methods for thin-walled structures,
- linear/nonlinear structural mechanics/dynamics,
- advanced applications in, e.g., stability analyses, coupled problems, contact, among others.