

Riccardo La Magna

University of Stuttgart, Institute of Building Structures and Structural Design (ITKE)

Riccardo La Magna is a structural engineer and PhD candidate of the Institute of Building Structures and Structural Design (ITKE) at the University of Stuttgart. In his research he focuses on simulation technology, innovative structural systems, bending-active and lightweight structures. He played an active role in the development and realisation of several research pavilions, as well as developing and building full-scale bending-active plate structures as part of his doctoral thesis. He's been author and co-author of several scientific publications, including the 2013 IASS Hangai prize winning paper.

Riccardo La Magna is also a member of COST Action TU1303 'Novel Structural Skins'.

Philipp Längst

str.ucture GmbH

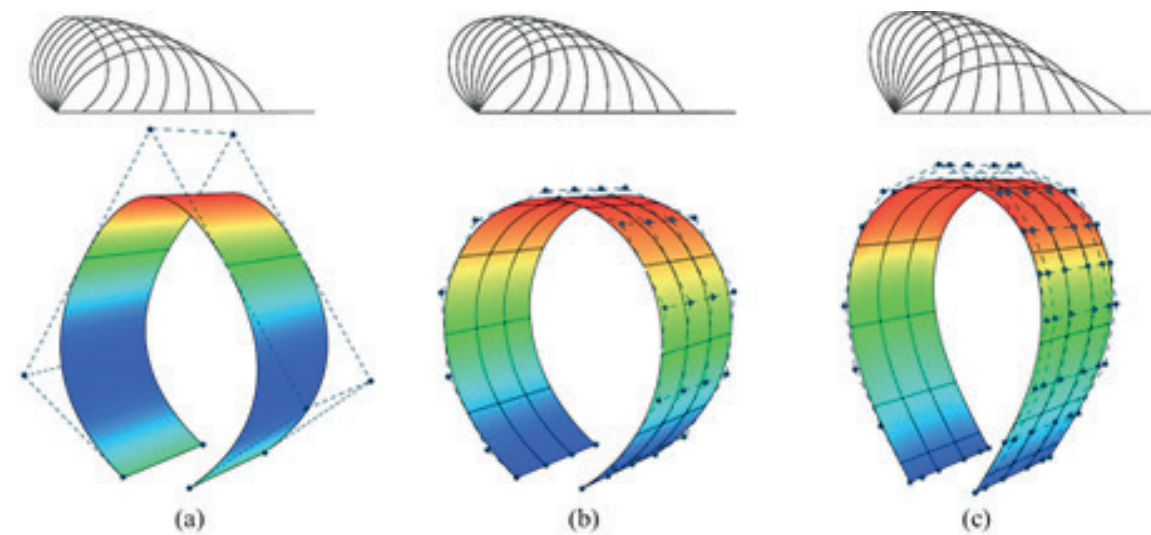
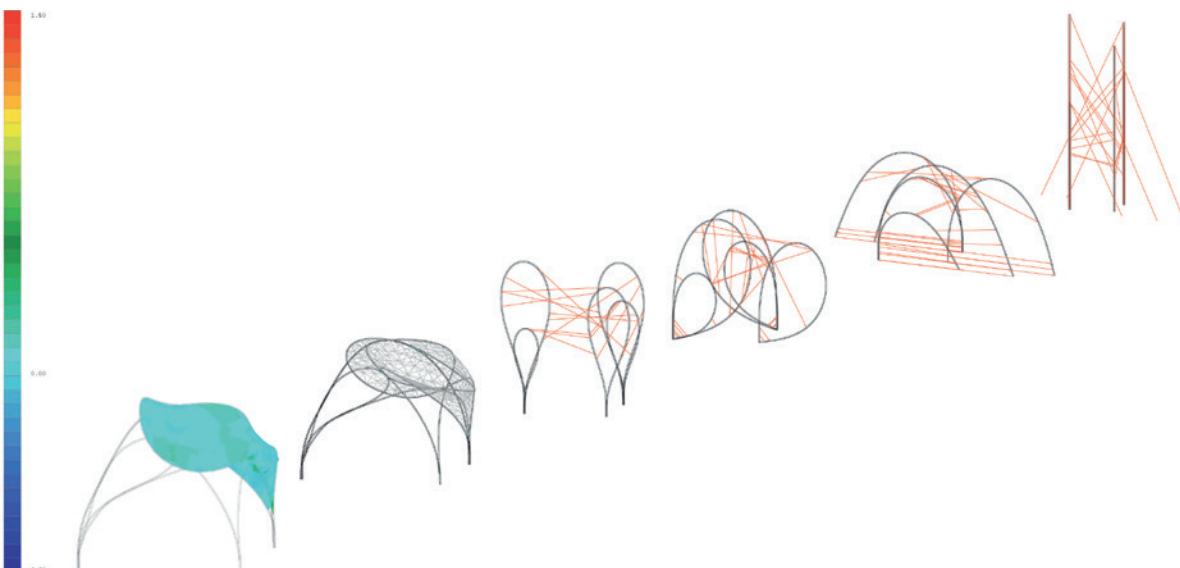
Philipp Längst received a B.Sc. degree (2012) in Civil Engineer from the University of Stuttgart, Germany. In 2013 he was part of Foster + Partners, Structural Engineering Department, London, UK. He graduated from University of Stuttgart with a M.Sc. degree in Civil Engineer in 2015, which included a research visit to the Chair of Structural Analysis, Prof. Dr.-Ing. Kai-Uwe Bletzinger, Technical University of Munich. His studies focus on linking architectural design with new technologies in finite element analysis in order to explore new approaches in lightweight design. Currently, he is part of str.ucture GmbH, Stuttgart as a Structural Engineer.

Philipp Längst is also a member of COST Action TU1303 'Novel Structural Skins'.

Gregory Quinn

Berlin University of Arts, Department for Structural Design and Engineering (KET)

Gregory Quinn is a structural engineer and researcher based in Berlin. Gregory's field of research is broad covering novel material technologies, actively bent systems and simulation techniques as well as virtual and augmented reality teaching aids. Gregory's doctoral thesis explores the pneumatic erection of elastic gridshells making use of novel simulation methods based on dynamic relaxation techniques. Having worked as a freelance structural engineer and previously employed by Arup Berlin, Gregory has substantial experience in high-rise, earthquake and specialist material engineering projects.



EXPLORING SOFTWARE APPROACHES IN SIMULATING BENDING-ACTIVE SYSTEMS

co-organised as Training School by COST Action TU1303, 'Novel Structural Skins'

Trainers: Riccardo La Magna, Philipp Längst, Gregory Quinn

with special support of Julian Lienhard, Daniel Piker and Anna Bauer

September 22nd - 24th, 2017

Rhinoceros, Grasshopper, Sofistik, Carat++, Kangaroo

The workshop will explore and compare 3 different software and simulation approaches in form-finding and analyzing bending-active structures.

In the first half of the Masterclass 3 different numerical approaches for form-finding large deformations in bending-active systems are introduced. For each approach we will give a brief theoretical background to the method and introduce its functionality through a variety of short tutorials. In the second half of the Masterclass we will compare the approaches in the format of a 'round robin exercise' to highlight and evaluate similarities, differences, strengths and weaknesses of the individual methods.

The three methods introduced in the Masterclass are

- Mesh based FEM Sofistik
- Nurbs based IGA Carat++
- Vector based DR Kangaroo

All 3 simulation methods use Rhino Grasshopper as an interface. This will facilitate the generating and comparing of input and output geometries for the form-finding process.

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