Master Thesis

Transformable architectures

Transformability is a property applicable to architecture that is kinetic, foldable, deployable or configurable. Transformable architecture can be adapted to the user's needs or respond to different scenarios over time.

Transformable architectures have a great potential to be able to solve climate challenges or complex situations where users cannot access. Many of these innovations can be found in devices in space engineering. Their applications are diverse, such as protective elements or devices that augment and enhance technical capabilities.

The realization of these architectures is challenging due to their geometrical, mechanical and manufacturing complexity. However, the feasibility has been proven in several research projects at the Chair of Structures and Structural Design. The final thesis is intended to continue the work in this field.

Objectives of the work

The objective of the thesis is the development and prototypical application of a transformable mechanism of architectural scale or industrial application. The project must reflect a technological innovation. The architectural device can be a structural entity or be composed of several parts (facade, roof), and should include:

- Mobile mechanisms: telescopic, sliding, scissor, or folding elements.
- A light and efficient structure.
- The possibility of adapting to several scenarios or climatic conditions.
- A reduced climate impact.
- Be mostly automated.

Requirements:

- Architecture student with interest in prototyping, design and digital fabrication.
- Great motivation to develop an intensive and individual multidisciplinary project: combining architectural research with design, engineering, and environment.
- Experience with Parametric Design and 3D Printing.

Chair of Structures and Structural Design

Univ.-Prof. Dr.-Ing. Martin Trautz
Reiff Museum Schinkelstr. 1
52062 Aachen

Kevin Moreno Gata, M. Sc.
+49 241 80 98215
morenogata@trako.arch.rwth-aachen.de