

Membrane Structures

The course "Membrane Structures" deals with the design and analysis of structural membranes, including the application of numerical simulation tools. The plugin Kiwi!3d is introduced for parametric CAD-integrated lightweight design.

Main topics:

What are structural membranes and how do they work?

How do we design and analyse membranes?

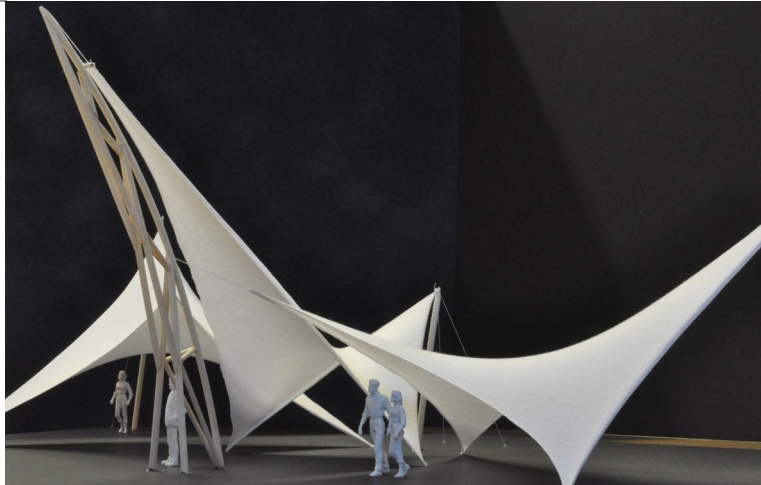
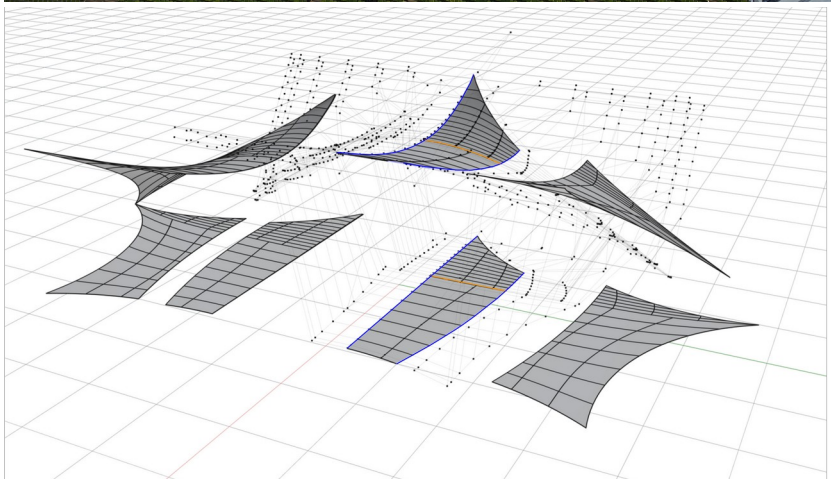
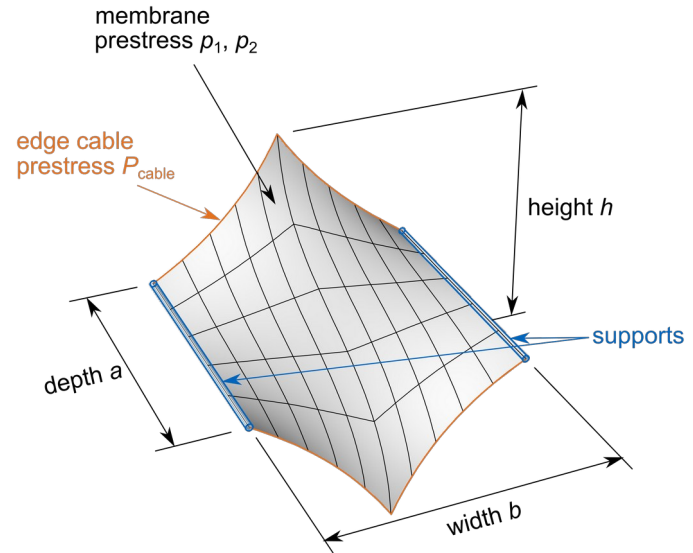
What challenges do we encounter in lightweight design?

How does CAD-integrated design and analysis work and what are the benefits?

A design project will be carried out in small teams, using the knowledge and tools from the lectures. The project will be evaluated for the final grade.

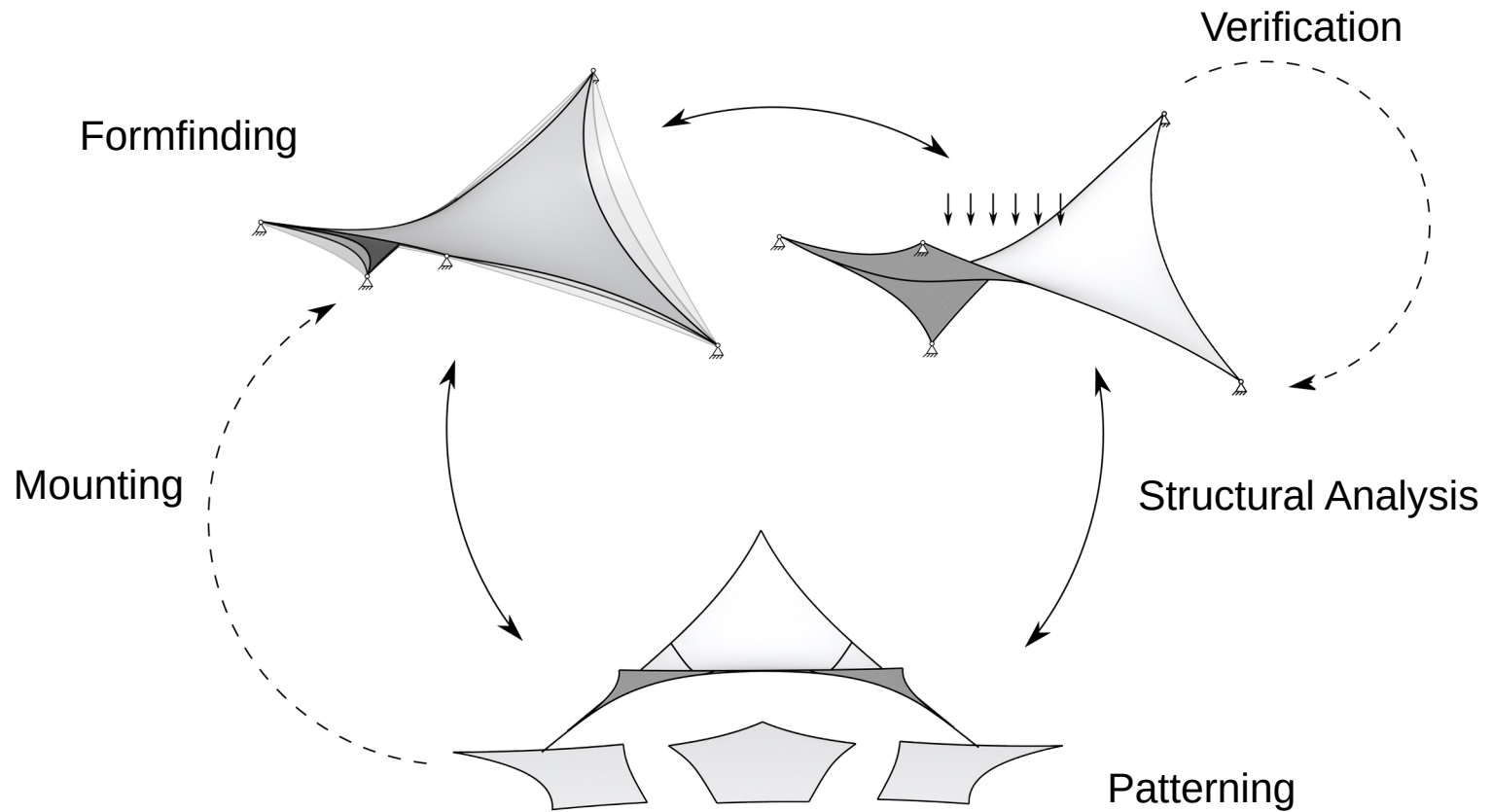
Dates: 4.11.2022; 25.11.2022 + 2 more days in 2023 tba

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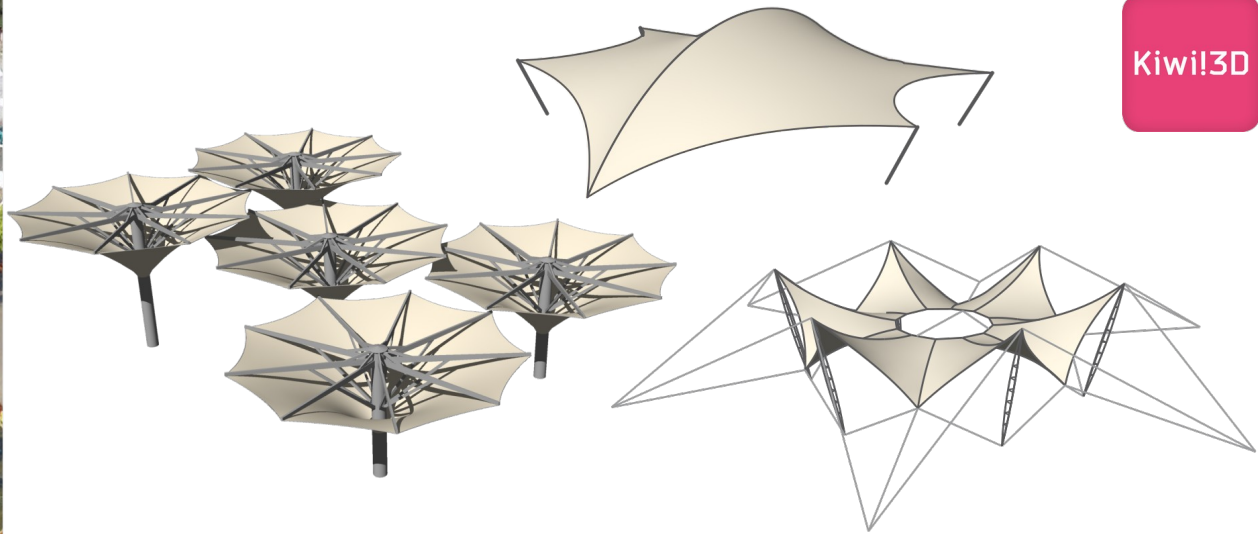


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The design cycle of membranes



Membrane Structures



Tut_01_Cable

Params Maths Sets Vector Curve Surface Mesh Intersect Transform Display Kiwi3d

Analysis + Elements + Loads + Model + Results + Supports + Util...

str.ucture TUM
LIGHTWEIGHT DESIGN. MADE IN STUTTGART.

60%

Geometry

Kiwi3d Generate Analysis Model (Preprocessing)

Kiwi3d Solve!

Kiwi3d Display Results (Postprocessing)