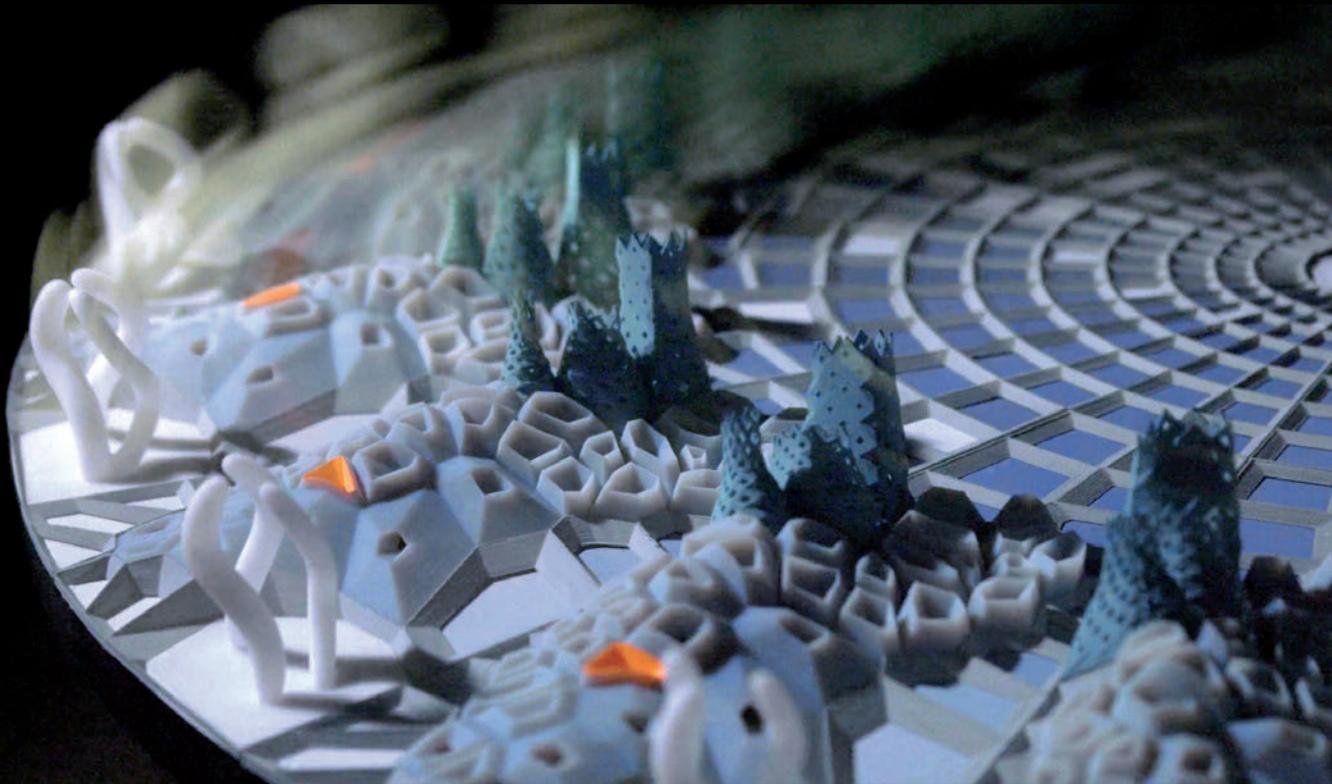


**DDU**

Digital Design Unit — Digitales Gestalten



# AnimateMatter

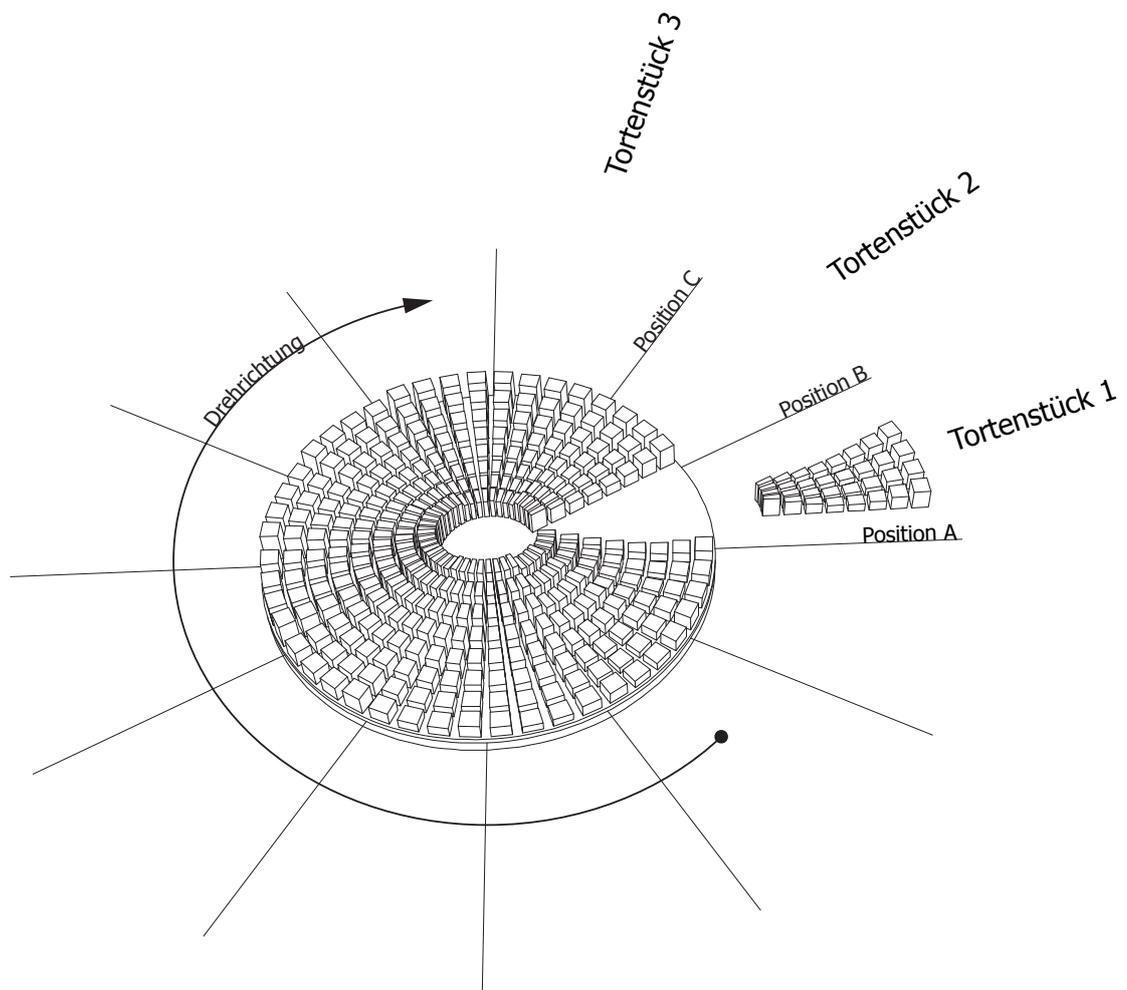
3D Zoetrop at Luminale 2016



# Animate Matter at Luminale 2016

More than 1,000 hours of 3D printing and 18 revolutions per second go into animating architecture. Animate Matter — a 3D-printed zoetrope, developed by the Digital Design Unit (DDU) at the Technische Universität Darmstadt — took a prominent place at the 2016 Luminale in Frankfurt am Main.





## What is a zoetrope?

The zoetrope is a device of the pre-film era that creates the illusion of animation through rotational movement. Similar to a flipbook that renders moving pictures from a series of still images, DDU's 3D zoetrope is a revolving disk subdivided in 18 slices. Each slice holds a gradually advancing frame of a parametrically designed, moving composition of architectural objects.





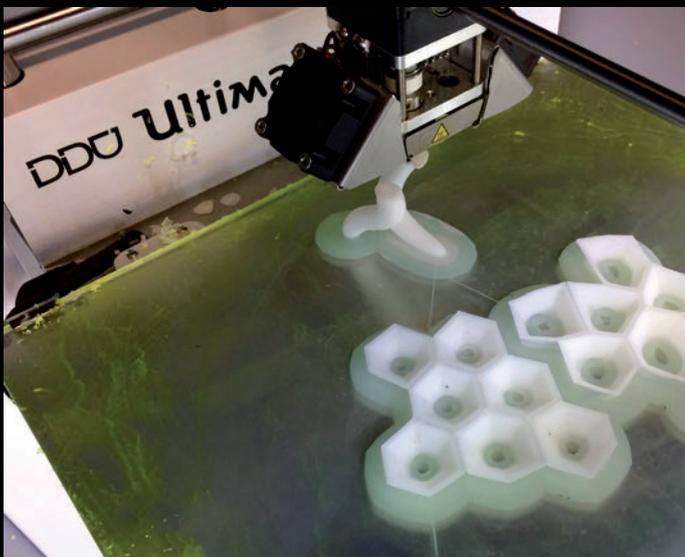
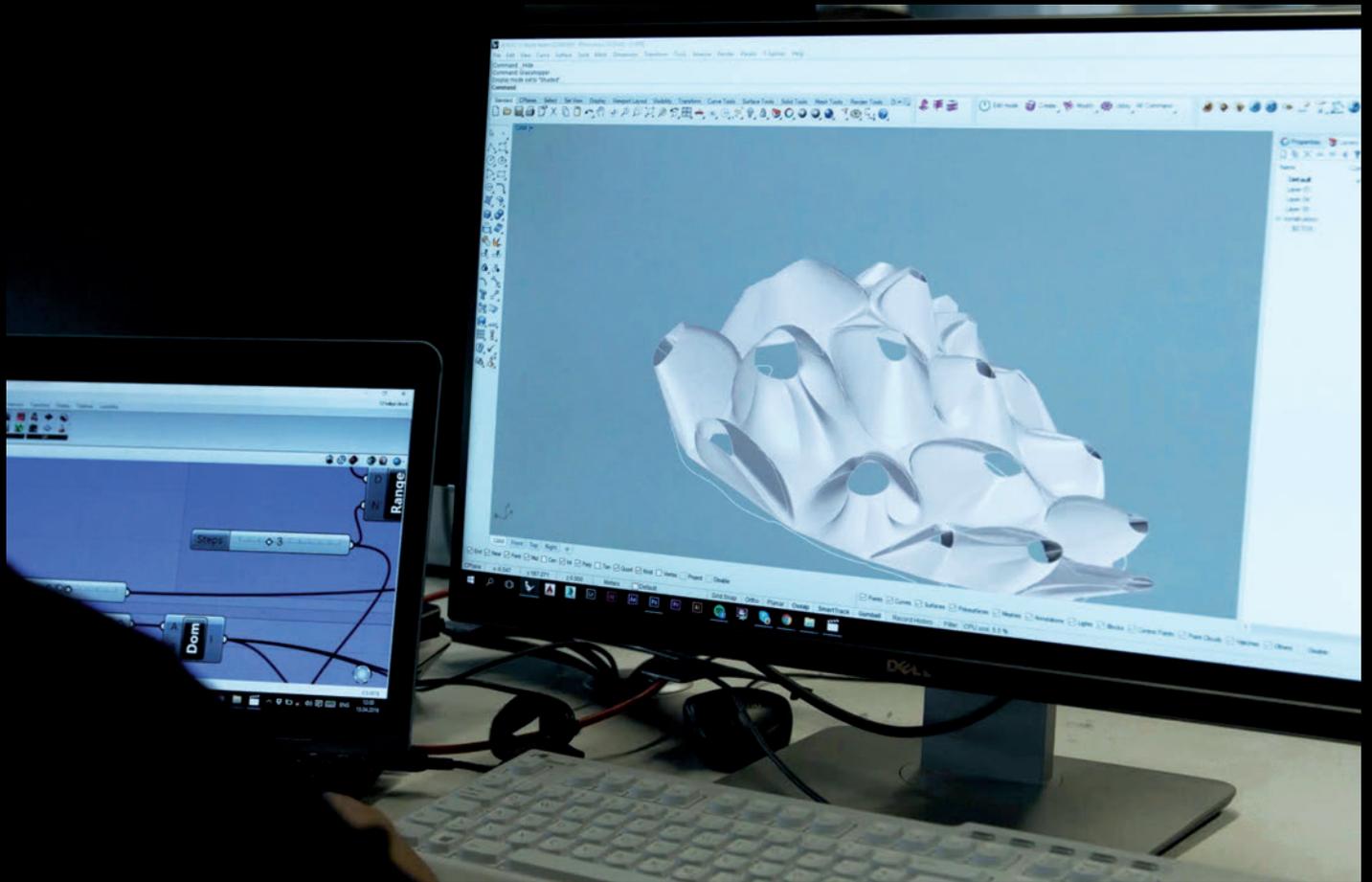
## How does it work

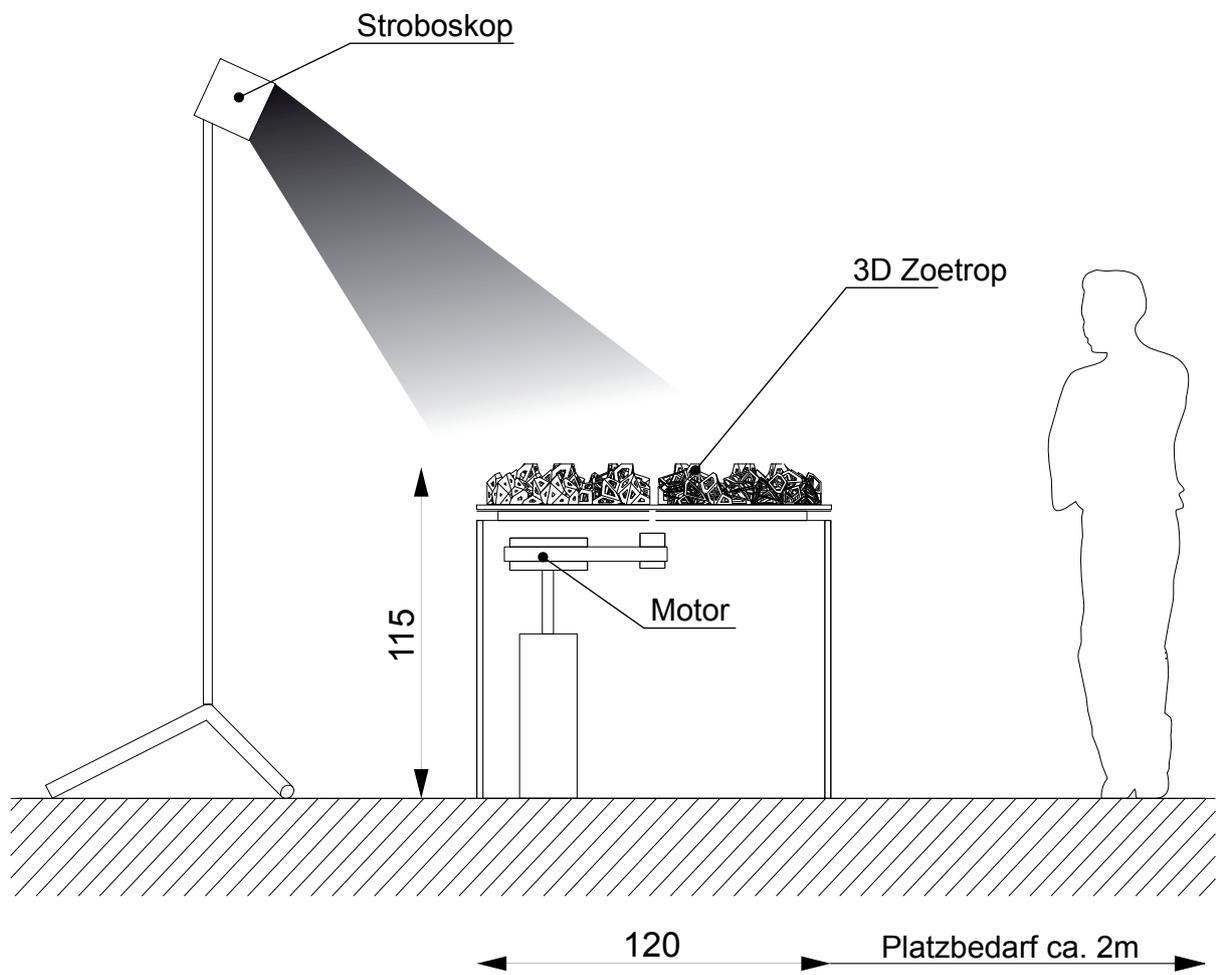
A rapidly flashing strobe light, synchronised to the rotational speed of the disk, illuminates the installation and keeps the objects from blurring together. A microcontroller syncs the rotation of the disc to the frequency of the strobe light. While the rotation is not perceptible by the human eye anymore the choreography of the animation becomes visible. The system allows for gradually changing the frequency of the light which makes objects appear to move slowly forwards or backwards.

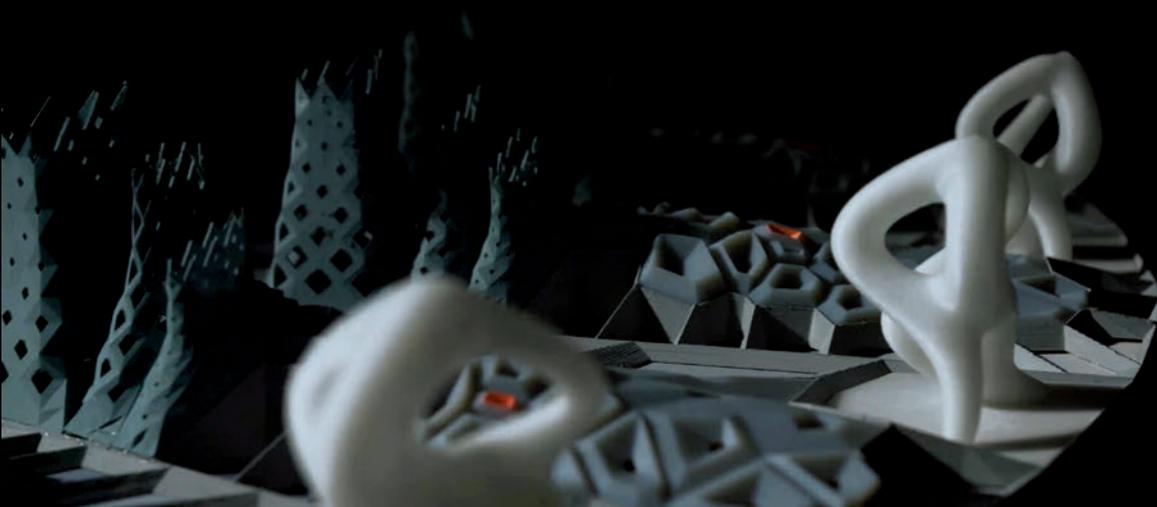
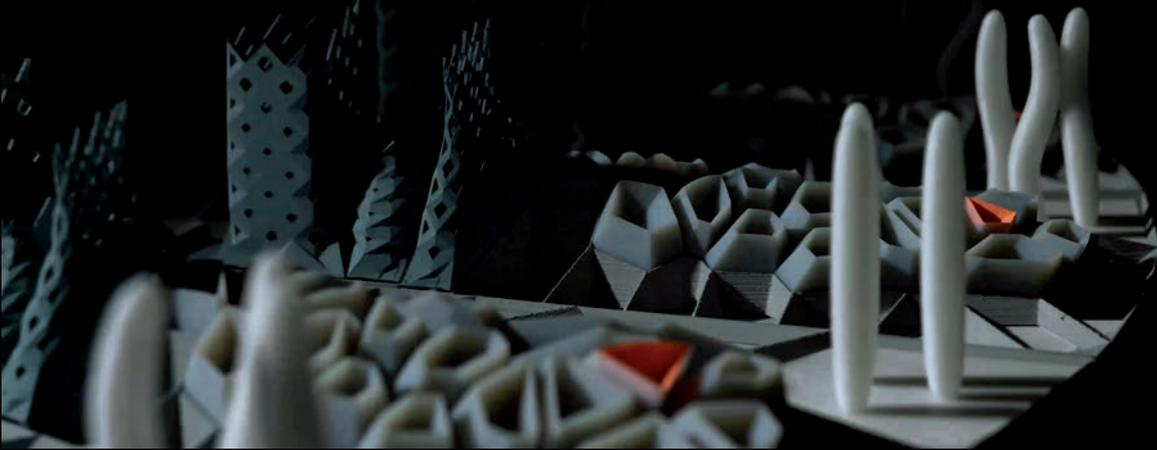


# Production

The DDU combined this late 19th century technique with 3d printing to migrate the fluidity and adaptability of parametrically designed architecture from the two-dimensional computer screen to the physical world. Animating geometry in the digital realm through changing input parameters is a common technique in architectural design. When being built, however, architecture is frozen into static form. Animate Matter seeks to push that boundary from the digital to the physical.



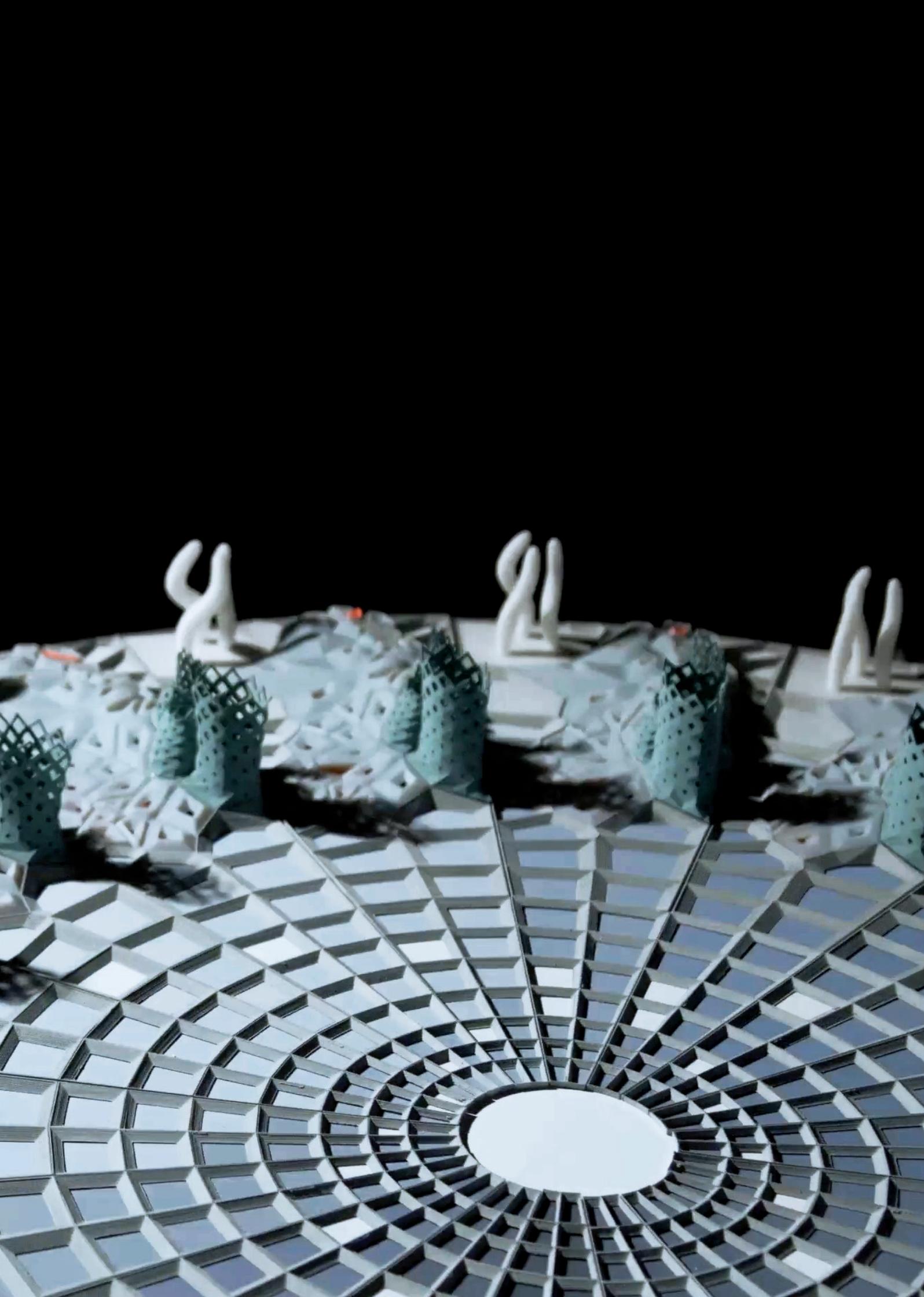




# Animations

Animate Matter demonstrates the mutability of colour, geometry and topology made possible through computational design in architecture. Three white sculptures coalesce into one and separate again in an endless loop of topological transformation. A series of towers change their geometry and porosity in a pulsating motion. All objects are embedded into an undulating landscape made from dynamically shifting cells and a flickering field of colours.









## Take a Look!

DDU designed and built the installation in collaboration with architecture students using digital parametric design tools. Animate Matter took more than 1.000 hours on six different 3D printers to print.

Video Animate Matter: <https://vimeo.com/162875299>



# AnimateMatter

## Project credits

Prof. Dr.-Ing. Oliver Tessmann,  
Digital Design Unit (DDU), Faculty of Architecture, TU Darmstadt

Design team:           Dipl. Ing. Bastian Wibranek, MA

## Students:

Beatriz Romero Colomer, Carolin Schmeel, Giang Le, Kay-Robert Dormann, Leonard Kaupp, Louisa Wenkemann, Samim Mehdizadeh, Sebastian Seibert, Vidal Madrià Guitart, Xue Peng, Zicheng Song

## 3D Print:

- 1 Objet1000, material: VeroGrey (photopolymere), Stratasys GmbH
- 5 FDM printer, materials: ABS and PLA, operated by the design team.

## Technology:

Alexander Stefas, Marcel Bilow (BuckyLab), Martin Wilfinger

## Film/Photos:

Oskar Gerspach

## Sponsors:

- DB Station&Service AG
- Stratasys GmbH
- HENSEL-VISIT GmbH & Co. KG
- schneider+schumacher Planungsgesellschaft mbH

[www.ddu-research.com](http://www.ddu-research.com)



Digital Design Unit — Digitales Gestalten

# Impressum

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