

## **Robotic BioConstruction - towards Large-scale Circular Fabrication Processes with Biomaterials in Architecture**

Initiative: Momentum - Förderung für Erstberufene

Bewilligung: 10.04.2023

Laufzeit: 4 Jahre

Building on its expertise in computational design and robotic fabrication processes for timber construction, Philipp Eversmann's chair will explore digital design and construction with biomaterials, where large-scale applications do not currently exist. This research will address the needs of a circular economy in architectural construction by bringing together materials science, computation, and digital manufacturing with living and non-living biomaterials. Three main thematic areas will be pursued: (1) design and fabrication processes with living materials, where growth processes are carried out under laboratory conditions and material, aesthetic and performance properties can be tailored to individual requirements; (2) design and fabrication processes with waste materials, with the aim of creating circular systems; and (3) joining of materials, where bio-binding systems need to be developed that can withstand structural, physical and production requirements. This will be achieved through the creation of a new, unique robotic biofabrication infrastructure, the exploration of novel biomaterials, the development of modular software and hardware for design and fabrication, and the use of simulation and machine learning to predict and program material behaviour.

### **Projektbeteiligte**

#### **Prof. Philipp Eversmann**

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Architecture, Landscape and City Planning

Experimentelles u. Digitales Entwerfen u. Konstrui

Kassel