What can you get from AMBS?

1. **Exploration of our mathematical approach to architectural design by parametric modelling**
2. **Mathematical knowledge of special surfaces and parameterizations useful in architecture**
3. **Development of design projects in cross-disciplinary teams**
4. **Input and advice from experts in bamboo structures plus own building experience**
5. **Mathematical background knowledge for the design of different surface patches**
6. **Perfect working conditions and exchange with top researchers from around the world**
7. **Production of scale models from digital data in the Makerspace of the SLUB Dresden**
8. **Presentation of your results and prototypes within a cultural and scientific setting**
9. **Excursions to cultural and scientific hotspots of the beautiful city Dresden**
10. **You will find out who Dini is :)**

Program

The core program focuses on design projects, which you will develop in small cross-disciplinary working groups during the first week of the summer school. In the second week you will apply your fresh knowledge in a prototypical project: a large sculpture made of bamboo. The support program will lead you to local research institutes as well as some of the famous cultural institutions of Dresden.

Please refer to the website of AMBS for details:
https://tud.link/e6t0

GMV
Geometric Modeling and Visualization

Organizer

Prof. Dr.-Ing. Daniel Lordick

Research Group
Geometric Modeling and Visualization

Postal address:
Institute of Geometry
TU Dresden
01062 Dresden

Visiting address:
Z21 249
Zellescher Weg 21-25A
01069 Dresden

Tel.: +49 351 463 34193
Fax: +49 351 463 36027
E-Mail: daniel.lordick@tu-dresden.de
https://tu-dresden.de/mn/math/geometrie/lordick

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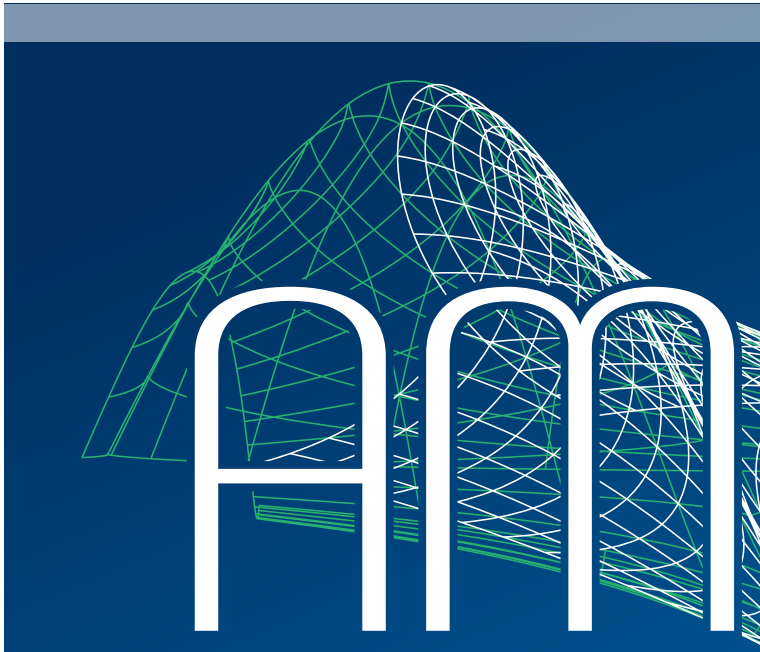
DRESDEN concept

TECHNISCHE UNIVERSITÄT DRESDEN



Architectural Math for Bamboo Structures

International Summer School 2023
at the TU Dresden
July 10 – 22

Topic

The main goal of AMBS is to use a mathematical approach to design efficient building structures. This includes skillful parameterizations of certain surfaces suitable for architectural design. The essential tools used to harness such surfaces are parametric modeling and geometric transformations.

Important but so far hardly noticed are the surfaces with negative constant Gaussian curvature (e. g. Dini), They allow special networks, having correspondences between asymptotic and principal networks. Benefits from combining those are explored during AMBS, since their properties allow the elegant creation of braced, piece-wise developable surfaces or/and planar quadrilateral panels.

Geometrical characteristics enhance design possibilities and we will explore this hands on with bamboo structures. The good reason for using bamboo is its sustainability and its structural capacity. The organic material will also challenge the precision of the parametric setup.

Background

AMBS is part of TU Dresden research within the SPP 2187: Adaptive Modularized Constructions Made in Flux.
As such it belongs to the AdvanceAEC network. It is driven by an international cooperation of researchers coming from different disciplines: GMV of TU Dresden (D), AMG of the GSA lab (ENSAPM, FR), CMAT of UMinho (PT), FAUL (PT). Additionally, it interacts with the exhibition Plant Fever currently on display at the Kunstgewerbemuseum Pillnitz.

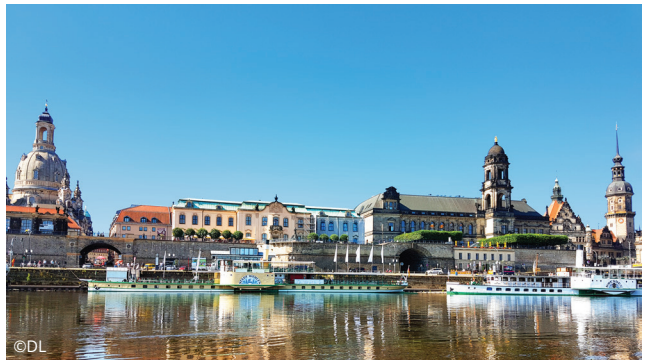
The strategies combining a mathematical approach with the requirements of architectural design will be presented during the upcoming AAG conference in Stuttgart.

Acknowledgement

The summer school is funded by the German Research Foundation (DFG) as part of the SPP 2187. Additional funding is made possible by the Excellence Initiative of the German Federal Ministry of Education and Research.

Venue

The summer school will take place in Dresden, one of Germany's most beautiful cities.
In 2012, Technische Universität Dresden has been awarded the title "Excellence University", indicating it as one of the leading German Universities.
Venue of AMBS will be the spacious Makerspace of the SLUB (Saxon State and University Library in Dresden) on the main campus of the TU Dresden.



Who can attend the summer school?

1. You are a young researcher, PhD student, young professional, postdoc or junior faculty member in architecture, engineering, design or mathematics?
2. You are already working on a project that deals with gridshell structures or bamboo structures or have interests within the scope of AMBS?
3. You appreciate to do cross-disciplinary work and research in small groups?
4. You want to develop a project from the conceptual phase to prototypes while being advised by experts?

Perfect. We would like to welcome you to AMBS!

Moreover we would like to invite artists to apply. Also, if you are a master student and feel attracted by the scope of AMBS, especially by the topic building with bamboo, please apply. We can provide up to three extra positions for a vibrant exchange of knowledge and experience.

Bend it like Dini!

BS

How to apply?

The summer school AMBS is open for a maximum of 20 regular participants. Participants will be supported with a grant for travelling costs and accommodation.

For applying to the summer school and additional information please visit the website:

https://tud.link/e6t0

Deadline for applications is Wednesday, June 21, 2023.
Acceptance letters will be sent by Friday, June 23, 2023.

Link within this QR-code:
https://tu-dresden.de/mn/math/geometrie/lordick/schnittstelle/veranstaltungen/summer-schools/bend-it-like-dini-architectural-math-for-bamboo-structures/application