

# Simulation and Optimization of Corrugated Boards

Ongoing research at the Institute for Paper Technology of the Technische Universität Darmstadt is focused on the simulation and optimization of corrugated boards. The value of simulating the behavior of these boards is recognized and expected to lead to a significant reduction in experimental trials. However, innovative approaches and fresh perspectives are still important in this evolving field.

The focus of this project is optimization, which involves analyzing and restructuring corrugated boards to make critical decisions about design strategies. The goal is to improve the weight, cost, and waste of cardboard. This project aims to not only improve board efficiency but to also study the mechanical behavior of corrugated boards and gain insights from various strategies and solutions.

To further this research, we are looking for students who can work on improving existing knowledge of simulation and optimization. For those who join, this project does not just conclude with a thesis. It offers a hands-on experience in data handling, simulation, and optimization.

In today's rapidly evolving academic and industry landscape, these skills, while technical, hold enormous significance. The experience gained from this endeavor not only elevates academic standing but also enhances their prospects in contemporary job markets.

## Required Knowledge

At least one of the following:

- MATLAB; Python; R; C++

At least one of the following basics:

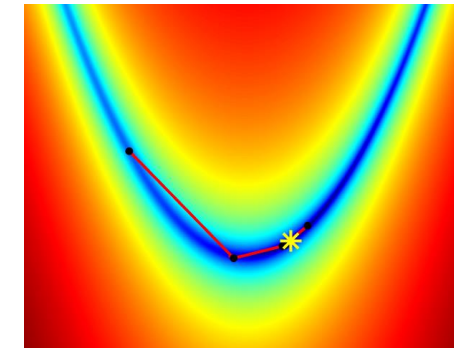
- FEM Simulation;
- Numerical Optimization;
- Numerical Analysis

## Work packages

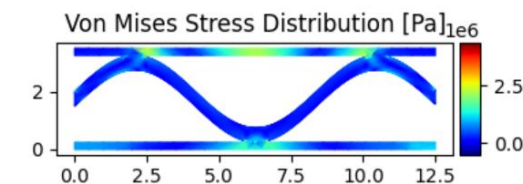
- Initial state-of-the-art review
- Experimentation with simulation / Improvement of the simulation
- Optimization using a framework containing the simulation
- Verification and validation
- Documentation & Presentation of the results

## Organizational

- Weekly meetings with the supervisor
- Language: English



Optimization of a benchmark function



Stress distribution of a Corrugated Board

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und Mechanische  
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**Start:** As of now or  
by appointment

Paper engineering  
skills not required!