Research Campus Digital Photonic Production DPP

Enabling Industries Through Application-Specific And Algorithm-Based Part Design

Motivation and Relevance

- Insufficient design guidelines for additively manufactured filigree structures and critical component areas lead to **“first-time-right” approaches with high material usage**
- Comprehensive engineering → How to **minimally design structures** to withstand process-related loads?

Approach

- **Simulation and experimental validation** of the behavior of thin structures under thermal and mechanical loads
- **Data-based identification and evaluation** of critical component areas using **KPIs** as well as **algorithm-based generation** of application-specific structures

Results

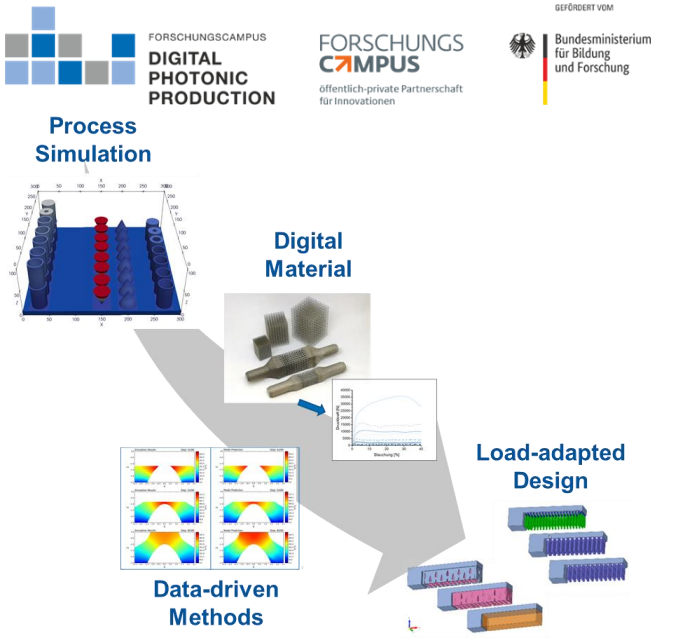
- **Process modeling:** thermal modeling / distortion determination
- **Digital material description** of filigree structures
- **DfAM:** generation of load adapted designs
- **Qualifying data-driven methods** within digital process chain

Research Area

- Algorithmic Design
- Digital Material
- Digital Twin
- Process Simulation

Partners

Picture



Contact

Jan Theunissen

jan.theunissen@dap.rwth-aachen.de

https://dap-aachen.de