Additive Manufacturing in Construction (AMC) envisions an alternative of predominantly manual construction and machine-assisted subtractive fabrication. The C04 research team, as part of the trans-regional project TRR277 (financed by DFG), aims to establish an advanced design decision support system for integrating digital design and AMC, considering multiple design criteria during early design phases. The following possible topics are available for the master thesis as well.

**Objective:**

- **Formal description of AMC-related processes**
  Based on a thorough literature review of academic and industrial implementations relating to AMC, you should model and formalize different off-site AM processes with essential details such as process parameters, building material and final products properties. Further, a comprehensive description of the whole production chain would be expected. Prior knowledge of AM technologies, fundamentals of UML, BPMN and Semantic Web technologies are very beneficial.

- **Multi-Criteria-Decision-Making (MCDM) for AMC in BIM-based design**
  The goal is to develop a software prototype for a BIM-based design decision support system (DDSS) considering multiple design criteria. Profound programming skills with C#, Web-frontend languages, and related framework/library like WPF, UWP and React would be preferred.