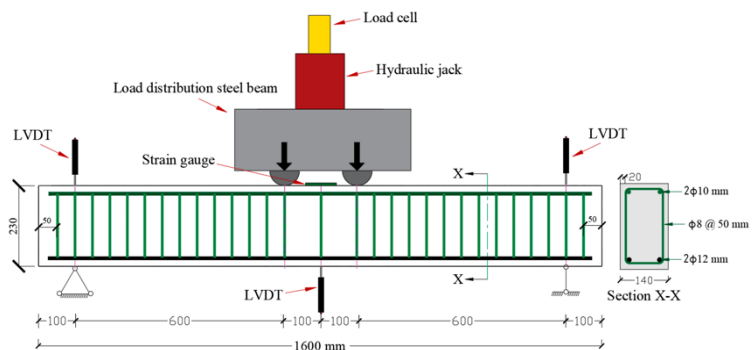


Master thesis

Sensitivity Analysis of Reinforced Concrete Beams using ABAQUS

Supervisor: M.Sc. Stefanie Schoen

Background: The combination of concrete and steel integrates the compressive strength properties of concrete with the tensile strength of steel, resulting in a material of exceptional strength, durability, and versatility. However, the strength of reinforced concrete is influenced by various material parameters. Understanding the interplay of these parameters is crucial for precise structural analysis and design. In this context, ABAQUS, a powerful finite element analysis software, serves as a tool for simulating the behavior of reinforced concrete structures.



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Task: The central objective of this study is to identify and analyze critical material properties that significantly impact the behavior of reinforced concrete beams. To achieve this, experiments from relevant literature will be replicated to comprehensively examine the influence of input parameters. A detailed literature review will be conducted to determine possible ranges of these input parameters. Finally, a sensitivity analysis will be performed to precisely capture and evaluate the parameter effects. Through this systematic approach, a comprehensive understanding of the material properties of reinforced concrete will be attained, proving essential for advancements in structural analysis and design.

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