Bachelorarbeit

On the geometrical optimization of reinforced concrete frame structures

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Hintergrund: Designers follow the requirements of a specific code of practice in the design process of structural elements to obtain an acceptable safe design. In addition, obtaining an economic design require adopting optimization procedure in the design process.
This can be achieved by means of structural optimization. The main aim for structural optimization is to search for more economical and structural efficient designs. The field of structural optimization has grown dramatically and various mathematical optimization algorithms exist. Different approaches had been proposed for the optimal design of reinforced concrete structures.

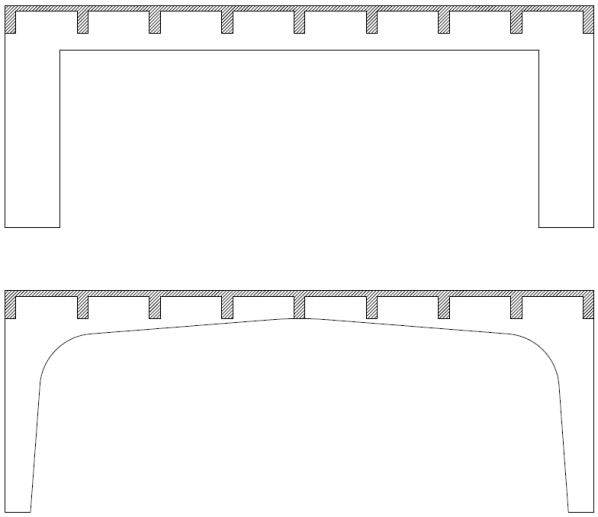

Fig. *Concrete Frame: a) initial design, b) optimized design*

Aufgabenstellung: In this thesis, design optimization for concrete frame structures shall be performed in order to minimize the stresses of the concrete frame structural elements. First, the formulation of the optimization problem in terms of all the design variables and constraints shall be considered. Then, the optimization procedure is performed by combining a classic/modern optimization technique with finite element analysis.

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