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**Topology optimization for reinforcement of no-tension structures** (Article)

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**Abstract**

In the paper, the reinforcement of no-tension structures by the application of superposed high-strength sheets, or by the insertion of tensile bars, has been considered with the purpose to set up a design path aiming at the positioning of the new material according to some optimal criterion. In detail, no-tension models are adopted which are recognized as an effective tool for analyzing a wide class of structures (e.g., masonry and reinforced concrete members), and the equilibrium and the failure analysis of the reinforced body are developed with particular reference to its ultimate limit state of collapse. Finally, an approach through the "topologic optimization" is proposed for the identification of the optimal distribution of the reinforcement, and some of the obtained results are shown. © 2013 Springer-Verlag Wien.

**Indexed keywords**

**Engineering controlled terms:** Optimization; Reinforced concrete

Effective tool; High strength sheets; Optimal criteria; Optimal distributions; Reinforced concrete member; Tensile bar; Topologic optimizations; Ultimate limit state

**Engineering main heading:** Reinforcement

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