Title: **A ground structure approach for topology optimization of nonlinear trusses**

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ABSTRACT: Most papers in the literature which deal with topology optimization of trusses using the ground structure approach are constrained to linear behavior. Here we address the problem considering nonlinear behavior. More specifically, we concentrate on hyperelastic models, namely Ogden, Hencky, Saint-Venant and Neo-Hookean. In the optimization process, we consider different objective functions such as end compliance, strain energy and total potential energy. In the linear case, they are all equivalent; but in the nonlinear case, there are interesting peculiarities associated to each one. In addition, we discuss ground structure generation techniques and their relation to the underlining optimization problem. Some representative examples are given to demonstrate the features of each model. We conclude by exploring the role of nonlinearities in the overall topology design problem.