

## **FINAL ABSTRACT FOR WCSMO 2013**

### **Topology design of trusses using a Voronoi-based ground structure method**

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We investigate truss topology design with special attention to the pre-processing phase of ground structure generation together with its implications on the optimization process. Specifically we use a Voronoi-based ground structure generation approach at different levels (level 1, 2, etc.) with operators to treat overlapping bars, to create desirable connecting bars, etc. We also establish a metric to relate the effectiveness of the ground structure with respect to the properties of the underlining topology optimization problem. We address several computational aspects such as convergence of the method and type of optimality criteria (e.g. standard and modified versions) adopted. We present several examples for two-dimensional and three-dimensional problems and comment on the features of each problem addressed.