An improvement technique for Bi-directional Evolutionary Structural optimisation (BESO) method

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Abstract

Bi-directional Evolutionary Structural optimisation (BESO) method is now a well-known and popular method in topology optimisation. A new interpretation of this method is presented in which the method is viewed as a two-step procedure. Based on this interpretation, a simple heuristic improvement technique is introduced to improve BESO results. The proposed improvement technique is tested and verified through numerical examples and its performance is compared with the averaging sensitivity stabilisation technique proposed in [1]. It is shown that the proposed improvement is robuster than the averaging sensitivity technique.

Keywords: Topology optimisation, BESO, Conjugate gradient method, hard-kill, soft-kill.

References
[1]   X. Huang and Y. M. Xie. Convergent and mesh-independent solutions for the bi-directional evolutionary structural optimization method, Finite Elements in Analysis and Design, 43 (14), 1039-1049, 2007.