

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Optimisation by hierarchical search** ILIA ZINTCHENKO, ETH Zurich, MATTHEW HASTINGS, Microsoft Research, MATTHIAS TROYER, ETH Zurich — Finding optimal values for a set of variables relative to a cost function gives rise to some of the hardest problems in physics, computer science and applied mathematics. Although often very simple in their formulation, these problems have a complex cost function landscape which prevents currently known algorithms from efficiently finding the global optimum. Countless techniques have been proposed to partially circumvent this problem, but an efficient method is yet to be found. We present a heuristic, general purpose approach to potentially improve the performance of conventional algorithms or special purpose hardware devices by optimising groups of variables in a hierarchical way. We apply this approach to problems in combinatorial optimisation, machine learning and other fields.

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Date submitted: 14 Nov 2014

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