Development of a benchmark problem and a general optimisation package with Powell's method to develop the benchmark

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Abstract

Several methods of optimisation exist. Which method to use and under what circumstances is a difficult issue. A proper study requires a benchmark problem with known characteristics on which various methods and different software can be tested to obtain answers as to which method is faster and under what circumstances, which is more accurate and so on. Here, we propose and develop the problem of constant flux over a pole face as a benchmark problem for magnetic system optimisation. It is a much studied problem which therefore has valuable data developed round it. We also describe a general-purpose finite element package as shareware for optimisation to develop some of the features of the benchmark problem with multiple solutions. © 2006 Elsevier B.V. All rights reserved.

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