

Complete Search for Constrained Global Optimization

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Theoretical tools for the reliable solution of global optimization problems have continuously improved over the years. While, in the past, stochastic approaches of limited reliability were indispensable for all global problems of significant size, complete search techniques can now handle reliably many large problems.

Successful strategies require the intelligent combination of convex analysis, constraint propagation, and interval techniques in a branch and bound approach and the careful handling of rounding error issues. Moreover, techniques from semidefinite programming have shown high promise. There are now several powerful packages on the market exploiting these tools.

The lecture discusses complete search techniques for the solution of global optimization problems, covering the most successful methods, important software, and benchmarking results.