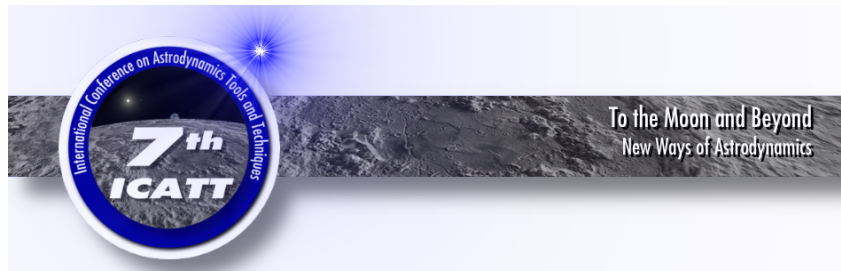


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Adaptive Pareto Front Sampling Based on Parametric Sensitivity Analysis in a Bi-Objective Setting

Friday, 9 November 2018 10:00 (30 minutes)

In order to solve non-linear multiobjective optimization problems, one usually solves multiple scalarized subproblems. This provides a discrete approximation of the Pareto front which gives useful information for the decision maker who, in praxis, has to select one single solution. If the desired solution is not part of the precomputed discrete approximation one needs to apply interpolation techniques.

This contribution shows a method which uses information from parametric sensitivity analysis of the scalarized subproblems in order to choose the stepsize between samples adaptively to obtain a better interpolation between precomputed solutions. The problems are solved with the NLP solver WORHP which provides sensitivity information in an efficient way by reusing the factorization of the KKT matrix of the last optimization iteration. We show the basic functionality of the presented method by applying it to several bi-objective optimization problems. The method can also be used for more than two objectives if one can identify the neighboring precomputed points which are then used for interpolation.

Summary

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