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Sommario/riassunto	Long description: We consider expensive optimization problems, that is to say problems where each evaluation of the objective function is expensive in terms of computing time, consumption of resources, or cost. This often happens in situations where the objective function is not available in analytic form, e.g. crash tests, best composition of chemicals, or soil contamination. Due to this lack of analytical representation we also speak about `black box functions'. In order to use as few function evaluations as possible within the optimization process, a sophisticated strategy to determine the evaluation points is necessary. In this thesis we present an algorithm which belongs to the class of the wellknown Radial basis function (RBF)-methods. RBF-methods usually incorporate subproblems which are difficult to solve exact. In order to solve these problems exact, we developed a Branch & Bound routine. This routine computes lower bounds by using the property of `conditional positive definiteness' of the RBF. We present a formula for the inverse of a blockmatrix with solely singular diagonal blocks. We also present a partitioning rule for multidimensional rectangles, which gives much freedom in the choice of the bisection point subject to preserve the important property of `exhaustiveness'.

We tested our algorithm and present results for both expensive problems with only box constraints and expensive problems with general convex constraints.