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Optimization problems and $(0,2)$-η-approximated optimization problems

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ABSTRACT.

In this paper, we attach to the optimization problem

$$(P)\qquad \begin{array}{ll} \min & f(x) \\ \text{s.t.} & x \in X \\ & g(x) \leqq 0 \\ & h(x) = 0, \end{array}$$

where X is a subset of $\mathbb{R}^n$, $f : X \to \mathbb{R}$, $g : X \to \mathbb{R}^m$ and $h : X \to \mathbb{R}^q$ are three functions, $m, n, q \in \mathbb{N}$, a $(0,2)$-η-approximated optimization problem (AP). We will study the connections between the feasible solutions of the η-approximated problem and the feasible solutions of the original problem. Then we will study the connections between the optimal solutions of Problem (AP) and the optimal solutions of Problem (P) via the saddle points of the two problems.

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