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A filled function which has the same local minimizer of the objective function. (English)

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Summary: Auxiliary function methods have been considered to be practical approaches for finding the global minimizer of multi-model functions. Filled function methods, as a typical representative of auxiliary function methods, obtain a global minimizer by minimizing the objective function and the filled function cyclically. In order to improve the efficiency of the filled function, this paper presents a new filled function which has the same local minimizers of the objective function, and these minimizers are all better than the current minimizer of the objective function. Therefore, it does not need to minimize the objective function except for the first iteration in the filled function method. Additionally, the proposed filled function excludes some disadvantages of conventional filled functions and a classical local optimization method can be applied directly to the new filled function to obtain a better minimizer of the original problem. Finally, numerical experiments are made and the results show the effectiveness of the proposed method.

MSC:

90C26 Nonconvex programming, global optimization

Keywords:

global optimization; filled function method; global minimizer; local minimizer

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