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A parameter free filled function for unconstrained global optimization. (English)

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Authors' abstract: The filled function method is considered as an efficient method to find the global minimum of multidimensional functions. A number of filled functions were proposed recently, most of which have one or two adjustable parameters. However, there is no efficient criterion to choose the parameter appropriately.

In this paper, we propose a filled function without parameters. This function includes neither exponential terms nor logarithmic terms so it is superior to the traditional ones. Theories of the filled function are investigated. An algorithm which does not compute gradients while minimizing the filled function is presented. Moreover, numerical experiments demonstrate the efficiency of the proposed filled function.

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MSC:

65K05 Numerical mathematical programming methods

90C30 Nonlinear programming

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Keywords:

unconstrained global optimization; local minimizer; global minimizer; filled function method; numerical experiments

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