# Finding Global minima with a new class of filled function

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**Abstract**

Global Optimization problems arise in many fields of science and technology [2-4]. Filled function method is a type of efficient methods to obtain the global solution of a multivariable function. The key idea of the filled function method is to leave from a current local minimizer $x^*$ to a lower minimizer $x^*$ of the original objective function $f(x)$ with the auxiliary function $P(x)$ constructed at the local minimizer. This method was introduced in Ge's paper [1] for continuous global optimization problem, the first filled has the form

$$p(x, r, \rho) = \frac{1}{r + f(x)} \exp\left(-\frac{\|x - x_k^*\|^2}{\rho^2}\right)$$

where $r$ and $\rho$ are two adjustable parametres.

This paper gives a new definition of the filled function. It shows that the filled function given in some paper are the special forms of this filled functions.

**References**

[1] Ge Renpu, A filled function method for finding global minimizer of a function of several variables[J]. mathematical programming. 46(1990) 191–204..

[2] Ge R.P.and Qin Y.F., A class of filled functions for finding a global minimizer of a function of several variables[J]. Journal of optimization theory and applications. 54(1987) 241–252.

[3] Xian Liu, Finding global minima with a computable filled function. Journal of global optimization. 19(2001) 151–161.

[4] Xian Liu, Wilsun Xu.: A new filled function applied to global optimization. Computer and Operation Research. 31(2004) 61–80.