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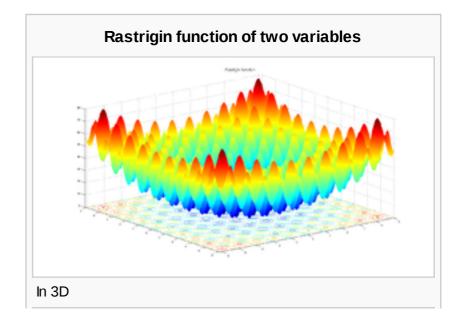
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## Rastrigin function

From Wikipedia, the free encyclopedia

In mathematical optimization, the **Rastrigin function** is a non-convex function used as a performance test problem for optimization algorithms. It is a typical example of non-linear multimodal function. It was first proposed by Rastrigin <sup>[1]</sup> as a 2-dimensional function and has been generalized by Mühlenbein et al.<sup>[2]</sup> This function is a fairly difficult problem due to its large search space and its large number of local minima.

It is defined by:

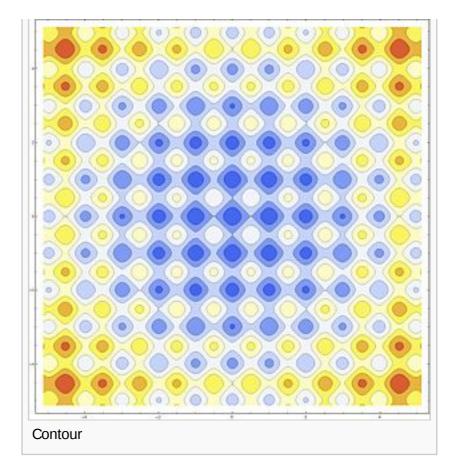


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$$f(\mathbf{x}) = An + \sum_{i=1}^{n} \left[ x_i^2 - A\cos(2\pi x_i) \right]$$

where A=10 and  $x_i\in[-5.12,5.12]$ . It has a global minimum at  $\mathbf{x}=\mathbf{0}$  where  $f(\mathbf{x})=0$ .

## See also [edit]

Test functions for optimization

## Notes [edit]

1. ^ A. Törn and A. Zilinskas. "Global Optimization". Lecture Notes in Computer Science, No 350, Springer-Verlag, Berlin, 1989.

2. ^ H. Mühlenbein, D. Schomisch and J. Born. "The Parallel Genetic Algorithm as Function Optimizer ". Parallel Computing, 17, pages 619-632, 1991.



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