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*Improved bat algorithm based on Sobol sequence and intermittent Lévy jumping.* (Chinese. English summary) Zbl 07404457

Summary: Bat algorithm (BA) has low convergence precision, slow convergence speed and easy to fall into local extremum. Based on the optimization strategies of cuckoo algorithm and sine and cosine algorithm, an improved bat algorithm (LZBA) based on Sobol sequence and intermittent Lévy jumping is proposed in this paper. Sobol sequence is used to initialize bat position, redefine adaptive inertia weight and optimization factor, and balance local and global search ability. A probabilistic substitution strategy is adopted to increase the population diversity, and the global optimal solution is obtained by Lévy jumping and chaos perturbation. Several standard test functions of different dimensions are selected for comparative optimization experiment. Experimental analysis shows that the LZBA is superior to BA algorithm and CS algorithm in terms of universality, stability and convergence accuracy.

**MSC:**

- 68T20 Problem solving in the context of artificial intelligence (heuristics, search strategies, etc.)
- 90C59 Approximation methods and heuristics in mathematical programming

**Keywords:**

bat algorithm; Sobol sequence; inertia weight; adaptive learning factor; chaos disturbance; intermittent Lévy jumping