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An Improved Many Worlds Quantum Genetic Algorithm

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Abstract : Aiming at the shortcomings of the Quantum Genetic Algorithm such as the multimodal function optimization problems easily falling into the local optimum, and vulnerable to premature convergence due to no closely relationship between individuals, the paper presents an Improved Many Worlds Quantum Genetic Algorithm (IMWQGA). The paper using the concept of Many Worlds; using the derivative way of parallel worlds' parallel evolution; putting forward the thought which updating the population according to the main body; adopting the transition methods such as parallel transition, backtracking, travel forth. In addition, the algorithm in the paper also proposes the quantum training operator and the combinatorial optimization operator as new operators of quantum genetic algorithm.

Keywords : quantum genetic algorithm, many worlds, quantum training operator, combinatorial optimization operator
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