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A New Chaotic Parameters Disturbance Annealing Neural Network for Solving Global Optimization Problems

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Abstract: Since there were few chaotic neural networks applicable to the global optimization, in this paper, we propose a new neural network model — chaotic parameters disturbance annealing (CPDA) network, which is superior to other existing neural networks, genetic algorithms, and simulated annealing algorithms in global optimization. In the present CPDA network, we add some chaotic parameters in the energy function, which make the Hopfield neural network escape from the attraction of a local minimal solution and with the parameter p_1 annealing, our model will converge to the global optimal solutions quickly and steadily. The converge ability and other characters are also analyzed in this paper. The benchmark examples show the present CPDA neural network's merits in nonlinear global optimization.

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Key words: Hopfield neural network, global optimization, chaotic parameters disturbance, simulated annealing

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