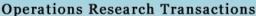
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基于打洞函数法的BP神经网络水文预报方法

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The BP Neural Network Hydrological Forecasting Algorithm Based on Tunneling Function Method

WANG Sheng-Gang, ZHANG Ying, XU Ying-Tao

- 摘要
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摘要 BP神经网络是目前水文预报中应用较为广泛的方法,但存在收敛速度慢、

易陷入局部最优的缺陷.由此提出了基于全局优化打洞函数法的水文预报方法,把打洞函数法和BP神经网络相结合,利用打洞函数使BP算法跳出当前局部极小点,得到一个函数值更小的极小点,循环运算直至找到全局极小点. 实验表明该水文预报方法能够提高预报精度,显示了良好的适用性.

关键词: 非线性规划 水文预报 打洞函数

BP神经网络

Abstract: BP neural network is widely used in hydrological forecasting.

Aiming at the handicaps in present methods such as slow convergence and easily getting into local optimization, this paper presents a novel hydrological forecasting method based on the tunneling function which is one of the effective deterministic methods. The tunneling function method can find a lower minimizer by leaving the minimizer previously found. By repeating these processes, a global minimizer can be obtained at last. Experiments show the proposed method not only can obtain high accuracy in flood forecasting, but also has longer effective real-time.

The hydrological forecasting

method can be used in operational hydrological forecasting.

Keywords: nonlinear programming, hydrological forecasting, tunneling function, BP neural network

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