

工程与应用

## 基于SGOA神经网络的短期负荷预测

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**摘要** 短期负荷预测的结果对电力系统的经济效益具有重要影响。针对多极值问题, 首次提出了一种体现大融合思想的共享式全局寻优算法, 将几种全局寻优算法有机组合, 使它们共享优化信息, 协同寻优, 从而形成最丰富的寻优机制, 达到最强的全局寻优能力。并且为了从根本上提高短期电力负荷预测中神经网络的速度和预测精度, 提出了将SGOA算法和BP算法相结合的短期负荷预测方法, 用SGOA算法来训练网络参数, 直到误差趋于一稳定值, 然后用优化的权值进行BP算法。在构建网络模型时, 同时也考虑到了气候、温度等因素的影响, 对它们进行模糊化处理后作为网络的输入。仿真结果表明基于这一方法的负荷预测系统具有较高的精度和实时性。

**关键词** [共享式全局寻优算法](#) [神经网络](#) [短期负荷预测](#) [电力系统](#)

分类号

## The short-term load forecasting base on share global optimization algorithm neural network

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### Abstract

The short-term load forecast results have important influence to the electrical power system economic efficiency. In view of the multi-minimum problem, it points out the mutual amalgamation of development tendency, proposes the sharing global algorithm which manifesting the big amalgamation thought. Also this paper combines present intelligent algorithms and group intelligence optimization algorithms organically together and makes them sharing the optimized information, optimize coordinately, thus forms the richest optimization mechanism and achieves the strongest global optimization ability. And in order to fundamentally enhance the neural network speed and the forecast precision in the short-term power load forecast, this paper proposes the short-term load forecast method which unifies SGOA and BP, and trains the network parameter with the SGOA algorithm to reach a stable error value. Then it carries on the BP algorithm with the optimized weight. During the construction of the network model, influence of factors such as climate, temperature and so on have simultaneously also been considered. There have carried on fuzzy processing about the factors and to take them as input of the network. The simulation indicates a high precision and timeliness results of the load forecast system based on this method.

**Key words** [Share Global Optimization Algorithm](#) [Neural Network](#) [short-term load forecasting power system](#)

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