

## 高电压技术

### 应用BP神经网络的超高压输电线路可听噪声预测

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#### 摘要:

以甘肃省多条330 kV超高压输电线路可听噪声的实测数据样本为例, 研究基于误差反传(back propagation, BP)神经网络的可听噪声预测的方法。将330 kV单回路三角型线路结构输电线路的可听噪声数据整理分析后建立数据样本, 选择影响可听噪声的13个因素作为输入变量, 可听噪声值作为输出变量, 建立3层结构的BP神经网络预测模型, 用数据样本训练和验证预测模型。结果表明, 基于BP神经网络的可听噪声预测方法能够较精确地预测可听噪声数据样本中除了输入样本以外的其余样本, 可作为超高压输电线路可听噪声预测的一种简单有效的方法。

#### 关键词:

### Prediction of Audible Noise for EHV Transmission Line Based on BP Neural Network

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#### Abstract:

Taking the measured audible noise data of 330 kV EHV transmission lines in Gansu power grid for example, a back propagation (BP) neural network-based approach to audible noise prediction is researched. Based on the interpretation and analysis of measured audible noise data of 330 kV single-circuit transmission lines with triangle structure, the dataset sample is obtained, then 13 factors that influence audible noise are taken as input variables and the values of audible noise as output variables, and then a BP neural network prediction model with 3-layer structure is built and the proposed prediction model is trained and verified by the dataset sample. Results of simulation verification, in which partial data of some 330 kV transmission lines in the dataset sample are utilized to predict the audible noise of the rest 330 kV transmission lines, show that the predicted results of audible noise of the rest 330 kV lines by the proposed method approximately conform to the measured audible noise data of these 330 kV lines in the dataset sample, thus the proposed approach can be used as a simple and effective method for audible noise prediction of EHV transmission lines.

#### Keywords:

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