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(54) **OPTIMAL POWER FLOW ACQUIRING METHOD FOR REGIONAL DISTRIBUTION NETWORK OF SMALL HYDROPOWER GROUPS BASED ON DEEP LEARNING**

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(57) **ABSTRACT**

Disclosed is an optimal power flow acquiring method for regional distribution network of small hydropower groups based on deep learning, which specifically includes the following steps: generating required data sets by adopting continuous power flow and power flow equation calculation methods; the data set is randomly divided into training data (80 percent) and test data (20 percent); training the built convolutional neural network model with training data to learn the mapping relationship between load and generator output power; inputting test data, and directly obtaining P_G and Q_G from the trained convolutional neural network; and solving residual variables V_i and θ_i with traditional power flow solver. The application can accelerate the solving speed of the optimal power flow problem with higher prediction accuracy.