

## Research on Modeling and Fault Diagnosis of Solar Power Generation System

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### **Abstract**

Solar power generation systems are primarily responsible for providing electrical energy to the electrical equipment and effective payload of small buildings and vehicles at various time periods. As the main power source of a solar micro-grid, the solar cell array plays a crucial role. Thus, online fault diagnosis and timely fault repair for it are very importance. This paper establishes a solar cell array model and conducts fault simulation. By utilizing wavelet analysis theory to detect faults, multi-layer wavelet energy of signals is extracted using discrete wavelets. The data are used as inputs for training with a BP neural network and pattern recognition. The trained neural network is employed to perform fault diagnosis on unknown signals. Simulation results demonstrate the effectiveness and feasibility of this method.