

## **A NOVEL METHOD FOR DETECTION OF DISTURBANCES IN UTILITY NETWORK PRODUCED DUE TO POWER SYSTEM OPERATIONS USING SQUARED WAVELET COEFFICIENTS**

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### **ABSTRACT**

The power quality of electric power has become an important issue for electric utilities and its customers. The power system operations introduce disturbances and transients in the network which affects the quality of supplied power. There is need of efficient and economic technique for detection of such disturbances to maintain the quality of power and development of suitable protection techniques to protect the system from abnormal conditions resulted due to these disturbances. This paper presents a novel method for detection of disturbances in the utility network produced due to power system operations using discrete wavelet transform (DWT) based multi-resolution analysis technique. The squared wavelet coefficients (SWC) are used for detection of power system disturbances. A test system having generation, loads, transformers and transmission lines and connected to the utility network through Island Interconnection device (IID) switch is modeled in MATLAB/Simulink environment. The MATLAB programming is used for DWT analysis of the disturbances.

**KEYWORDS:** Discrete Wavelet Transform, Power System, Squared Wavelet Coefficient, Switching Transient, Transmission Line, Islanding, Synchronization, Transmission Line Fault