

Labview-Based System for Fiber Links Events Detection

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Abstract : With the rapid development of modern communication, diagnosing the fiber-optic quality and faults in real-time is widely focused. In this paper, a Labview-based system is proposed for fiber-optic faults detection. The wavelet threshold denoising method combined with Empirical Mode Decomposition (EMD) is applied to denoise the optical time domain reflectometer (OTDR) signal. Then the method based on Gabor representation is used to detect events. Experimental measurements show that signal to noise ratio (SNR) of the OTDR signal is improved by 1.34dB on average, compared with using the wavelet threshold denoising method. The proposed system has a high score in event detection capability and accuracy. The maximum detectable fiber length of the proposed Labview-based system can be 65km.

Keywords : empirical mode decomposition, events detection, Gabor transform, optical time domain reflectometer, wavelet threshold denoising

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