Abstract

Two Pulse Shape Discrimination (PSD) techniques are proposed based on Cross Correlation (CC) and Principal Component Analysis (PCA). In CC-based PSD, two schemes are proposed to discriminate between different decay scintillation pulses. The first CC-based scheme is applied to digitized scintillation pulses in time-domain with different numbers of samples ranging from the last two samples up to the full length. The second CC-based scheme is applied to frequency components of the scintillation pulses, where pulses are transformed using one of the following transforms; Discrete Sine Transform (DST), Discrete Cosine Transforms (DCT), Discrete Wavelet Transforms (DWT), and Fast Fourier Transform (FFT). On the other hand, in PCA-based PSD technique, two schemes are applied to the digitized pulses in time domain and the transformed pulses coefficients in the frequency domain, respectively, as in the previous
Pulse Shape Discrimination Techniques based on Cross-correlation and Principal Component Analysis

sequence.

References


Index Terms

Computer Science  Signal Processing

Keywords

Cross Correlation  DCT  PCA  Pulse Shape Discrimination  DOI  DST  FFT
Wavelet