

Application of Cross-Correlation and Autocorrelation to Far-Field Digital Seismic Data for Determination of Delay Timing

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Abstract

Significant information about any blast is contained within the seismic signal generated by the blast. In this study, standard digital signal processing techniques are utilized to extract source parameter information from a seismic signal recorded at distances commonly used in compliance monitoring. Specifically, digital seismic data was analyzed using the cross-correlation and autocorrelation functions for the purpose of determining delay timing. The initial results are interpreted to indicate that: 1) Individual delays can be identified analytically but not visually for short delay periods and large source to receiver distances, 2) Delay timing can be resolved to a few milliseconds, and 3) Results can be obtained from data collected at a minimal number of locations.