

The Sequential Estimation of the Seismoacoustic Source Energy in C-OTDR Monitoring Systems

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Abstract : The practical efficient approach is suggested for estimation of the seismoacoustic sources energy in C-OTDR monitoring systems. This approach represents the sequential plan for confidence estimation both the seismoacoustic sources energy, as well the absorption coefficient of the soil. The sequential plan delivers the non-asymptotic guaranteed accuracy of obtained estimates in the form of non-asymptotic confidence regions with prescribed sizes. These confidence regions are valid for a finite sample size when the distributions of the observations are unknown. Thus, suggested estimates are non-asymptotic and nonparametric, and also these estimates guarantee the prescribed estimation accuracy in the form of the prior prescribed size of confidence regions, and prescribed confidence coefficient value.

Keywords : nonparametric estimation, sequential confidence estimation, multichannel monitoring systems, C-OTDR-system, non-linear regression

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