

## **Robust Adaptation to Background Noise in Multichannel C-OTDR Monitoring Systems**

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**Abstract :** A robust sequential nonparametric method is proposed for adaptation to background noise parameters for real-time. The distribution of background noise was modelled like to Huber contamination mixture. The method is designed to operate as an adaptation-unit, which is included inside a detection subsystem of an integrated multichannel monitoring system. The proposed method guarantees the given size of a nonasymptotic confidence set for noise parameters. Properties of the suggested method are rigorously proved. The proposed algorithm has been successfully tested in real conditions of a functioning C-OTDR monitoring system, which was designed to monitor railways.

**Keywords :** guaranteed estimation, multichannel monitoring systems, non-asymptotic confidence set, contamination mixture

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