

Influence of TDI-channels with anomalous noises on the probability of detecting small-sized objects by multiple row scanning photo-detectors

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The effect of anomalous TDI channels in terms of noise power spectral density (PSD) on the probability of detecting small objects by scanning multirow photodetectors (FPA) is considered. A series of FPA output images simulating the signals of TDI channels with 4 main types of PSD were generated, the probability of detecting a small object was calculated, and the effectiveness of various combinations of linear filters used in intraframe processing was evaluated. It was found that TDI channels with low-frequency noise most significantly affect the probability of detecting a small object, and the successive application of an adaptive recursive filter and a window filter quasi-matched to the signal increases it by 22 % even in the presence of 6 % anomalous TDI channels in the FPA.

Keywords: multi-row photodetector, detection of small-sized objects, abnormal TDI- channels, inhomogeneity of the power spectral density of TDI channels.

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