

Algorithm of Statistical Correction of Spatial Nonuniformity of the Multiscan Image

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Abstract. During orbital functioning Earth remote sensing devices for absolutization of the received signal regularly carry out internal onboard calibration. However in case of using a multielement photodetector as a signal recording device there can be situations when, as a result of the carried out onboard calibration, spatial uniformity of a signal across the field of the photodetector is not fully provided when surveying a uniform area of the underlying surface.

The article offers the algorithm to correct the specified nonuniformity based on the statistical analysis of a signal from multielement photodetectors. Under such conditions, the redundancy of information arising because of overlapping of image scans is employed. The main advantage of this algorithm is its nonparametricity, i.e., only the initial multiscan image is required for its operation.

The offered algorithm is tested on the real data obtained from the Russian satellite of Earth remote sensing.

Keywords: multiscan images, spatial nonuniformity, satellite systems of Earth remote sensing, linear multielement photodetectors