ABSTRACTS

**ВОПРОСЫ РАДИОЭЛЕКТРОНИКИ**

### серия

**ТЕХНИКА ТЕЛЕВИДЕНИЯ**

**2018 вып. 4**

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**ТЕХНИКА ТЕЛЕВИДЕНИЯ**

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*Tsytsulin A. K., Fahmi Sh. S., Adamov D. Yu.,**Bobrovskiy A. I., Zubakin I. A., Kamenev A. A., Morozov A. V., Rogachev V. A., Chernogubov A. V.* **Principle of dominant information аnd its application to video informatics. Рр. 3–16.** The main provisions of the principle of dominant information, defining key operations in the processing of video information. The methodological unity of information processing in the photosensors and devices for making decisions or digital coding of the source is shown. **Keywords:** dominant information, background information, noise information, optimization, detection, source coding

*Kamenev A. A., Soluyanov A. A.* **Method for modeling of a space object radiant intensity phase function at optical range. Рр. 17–24.** Core components of a method for modeling of a space object radiant intensity phase function optical range are outlined. Assembled space objects moving on low Earth orbits are considered, spectral features of external radiation sources and space object surface coating are taken into account. Radiant intensity phase function at visible range for a small satellite is presented as an example. **Keywords:** space vehicle, mesh model, radiant intensity phase function, optoelectronic system, spectroenergetic characteristic.

*Kamenev A. A., Zakutaev A. A.* **Modified integration method images of space objects at their complex. Рр. 25–33.** The analysis of the influence of the features of the tasks of observing space objects and the characteristics of domestic matrix photo-receiving devices on the complexing of images in the visible and infrared ranges. A modified method of interpolation of images based on the formation of clusters of photosensitive elements has been developed, allowing to take into account features of background-target scenes and viewing angles of space objects in these ranges, which reduces the resource-intensive calculations and increases the contrast of images when solving the problem of their integration. Clustering is implemented in hardware. **Keywords:** interpolation, integration, multispectral optoelectronic system, space object.

*Logunov S.V., Chernogubov A. V., Fedorenko D. S*., **Determination of the design features of a rotating geostationary satellite based on the analysis of two-color diagrams**. **Рр. 34–41**. A method for processing the results of measurements performed with the help of light filters implementing Johnson's multicolor photometric system is considered with the aim of determining the design features of a geostationary satellite. On the basis of the analysis of two-color diagrams using the minimum distances algorithm, the materials of external coatings and structural elements of the observed satellite. **Keywords:** multicolor photometry, geostationary satellite, color index, stellar magnitude

*Korolev S. Y., Chesta O. I., Bogoyavlensky A. I.,* *Miller A. I.* **Preparation of space objects surfaces optical characteristics data for software dedicated to modeling space objects reflective and radiant features. Рр. 42–48.** Results of normalized scattering phase function and spectral reflectance measurements for an element of multilayer insulation and solar cells are presented. A parametrical approximation of the results is proposed. A conceptual approach to the input data preparation from the results for software dedicated to modeling space objects with composite surface reflective and radiant features is described. **Keywords:** reflective and radiant features; scattering phase function; statistical modeling; multilayer insulation; solar cell; solar panel.

*Tsytsulin A. K., Rogachev V. A., Kamenev A. A., Zakutaev A. A., Shirobo­kov V. V., Merzliakov M. M.* **Threshold detection characteristics of precision optical electronic systems.** **Рр. 49–58.** OES modes analyzed: dark noise limited mode, background limited mode, random signal detection mode, general mode. Expression of the threshold signal for noise and threshold signal for the probability for all modes obtained. It has been determined that the background limiting mode and the general mode, which take into account both the signal and the signal noise, can improve the threshold signal in proportion to the level of signal noise. **Keywords:** precision optical electronic system, detection, noise threshold signal, probability threshold signal, dark noise limited mode, random signal detection mode, background noise limited mode and general mode

*Sagdullaev T. Yu., Sagdullaev Yu. S.* **Basics of building information-measuring systems for multispectral television. Рр. 59–67.** Features of registration of a radiant flux in information-measuring systems of a multispectral television are considered with the use of differential, integral and integral-differential methods for recording a radiant (light) flux. **Keywords:** information-measuring systems, multispectral television, registration of radiant flux, methods

*Dvornikov S. V., Ustinov A. A., Gordeychuk F. Yu.* **Adaptive frequency selection in MULTI-channel video transmission systems. Рр. 68–74.** An approach to the adaptive choice of frequencies suitable for video transmission is proposed. An analytical device for calculating the time delay of video transmission in the presence of affected frequencies was developed. The results of computer simulation for the TETRA standard are presented. **Keywords:** adaptive choice of suitable frequencies, timeliness of transmission, video transmission, OFDM technologies, protocols of TETRA standard.

*Bestugin A. R.,* *Dvornikov S. V., Morozov E. V., Kryachko A. F.* **Orthogonal frequency multiplexing of channels on the basis of signals with a minimal frequency shift. Рр. 75–80.** An approach to the formation of OFDM transmissions based on signals with a minimum frequency shift is proposed. A theoretical justification of its validity is given. The results of the study, confirming the reduction of modulation noise. Developed general recommendations. **Keywords:** signals with a minimum frequency shift, sub-channel noise, video transmission, OFDM transmission