ABSTRACTS

### ВОПРОСЫ РАДИОЭЛЕКТРОНИКИ

### серия

### ТЕХНИКА ТЕЛЕВИДЕНИЯ

### 2017 вып. 3

*Kornyshev N. P., Lyubimov M. D., Senin A. S.* **Evaluation of the results of correction of geometric noise in a highly sensitive matrix detector of IR-range. PP. 3–8.** The expediency of joint quantitative and qualitative evaluation of geometric noise and the choice of method of correction and control points on the histogram signal. **Keywords**: IR-sensor, geometric noise, the reference point

*Baranov P. S., Mantsvetov А. А., Belous D. A., Puchka E. U.* **Sensitivity of area CCDs and CMOS-sensors in case of different light sources**. **PP. 9–15.** Values of integral and threshold sensitivity of area CCDs and CMOS-sensors of Sony in case of the identical modes of accumulation and the commensurable sizes of pixel are received. Results of theoretical calculations and integral and threshold sensitivity are given when using different sources of lighting. **Keywords**: solid-state image sensor, sensitivity, area CCD, CMOS-sensor, noise of the image sensor, light source

*Vargin P. S.* **Estimation methods of image definition and resolution of a digital television system. PP. 16–34.** Methods for determining the contrast frequency characteristics of digital television systems are considered. The formulas for mathematical modeling of television camera signals are provided when observing bar and sine patterns. **Key words:** CFC, clarity, resolving power, digital camera, mathematical signal model, resolvometry, Fresnel zones, test chart, slanted-edge method, resolution standard, test pattern.

*Baranov P. S.*, *Mantsvetov А. А.*, *Belous D. A.*, *Dmitrieva*  *A. U.* **The designing of the television systems for registration high-rate processes. PP. 35–43.** The basic elements of the TV systems for registration high-rate processes were examined. The market review of high-speed TV cameras was conducted. Recommendations for selection of equipment for configurable TV system were given. **Keywords**: high-speed TV camera, video interface, high-speed video recorder.

*Sagdullaev Yu. S., Kovin S.D, Popov A.V., Shavkunov O.V.***On the issue of recognition of objects by spectral features. PP. 44–50**. The process of spectral selection of objects of multicomponent images is formalized and the spectral portrait of objects is described using the registration of the radiant flux in the m-bands of the optical spectrum. **Keywords:** spectrozonal television systems, selection optical images, spectral portrait objects

*Volkov O. A.*, *Demin A. V.*, *Konstantinov K. V.* **Optical system of meter meteorological optical range. PP. 51–59**. The principles of constructing a meteo­rological optical distance meter of visibility are considered, a new relationship is obtained for its determination. The optical scheme of the meteorological optical visibility meter is shown and the characteristics of the new meter are presented. **Keywords: optical system, meteorology, measurement, visibility, transmis­someter, aeronautical meteorological station**

*Badalyan B. F., Gomtsyan H. A., Gomtsyan S. G.* **Wavelet-compression and clearing images in the wavelet toolbox package. PP. 60–66**. The approaches and principles of clearing images from noise and determining QRS-complexes of cardio signals with the help of various mathematical transformations are considered. The theoretical foundations of wavelet analysis are presented. In the Wavelet Toolbox environment, wavelet transformation, compression, and cleaning of cardio signals and images are realized. **Keywords:** cardio signal, QRS complex, wavelet transform, spectrogram, basis function, noise, compression.

*Dvornikov S. V*., *Gulidov A. A*., *Fedorenko I.  V.* **Correlation detection of low-energy signals in the basics of non-harmonic functions. PP. 67–76**. The problems of detection of low-energy signals are considered. An approach is suggested for the realization of autocorrelation procedures for signals in non-harmonic bases. A possible gain in computing costs is shown. **Keywords:** Low-energy signals, autocorrelation procedure, bases of non-harmonic functions, spline-characters.

*Dvornikov S. V., Ustinov A. A., Okov I. N. Tsarelungo A.B.,* *Dvorovoi M. O., Tsvetkov V. V.* **Compression of graphic files through the risez procedure. PP. 77–86.** The problems of compression of graphic image files are considered. A compression approach based on the implementation of the embedded procedures of the Windows operating system is proposed. The possible gain in the transmission rate is shown when using the developed method. **Keywords:** compression of graphic files, discrete cosine conversion, increasing the transmission rate.

*Pshenichnikov А. V.* **Methods of forming signal structures noise immunity video data transmission channels. PP. 87–93**. The paper presents the results of a study on the theoretical methods for the formation of signal structures with unchanged structural stealth properties. The limitations of the practical implementation of the developed methods are justified. The simulation results confirming the enhancement of the stability properties of the developed signal models to the deliberate effect. **Keywords:** noise immunity, signal structure, method of forming.

*Dvornikov S. V., Fokin G. A., Abdulwahab Hussein Al-odhari, Fedo­renko I. V.***Positioning of mobile TV systems on reference signals in LTE networks.** **PP. 94–103**. An estimate of the positioning accuracy of MT subscriber stations by the difference-ranging method in LTE networks was performed depending on the number of resource blocks determining the bandwidth of the PRS signals. Estimations of the positioning accuracy for the difference-ranging method based on the Levenberg-Marquardt algorithm by means of modeling in MatLab are obtained. **Keywords**: positioning reference signal (PRS), mobile communication system (SMS), Long Term Evolution (LTE), resource block (RB), OTDOA, advanced LTE base station (eNB), subscriber station (UE).

*Galenitsky A. A., Samorodov A. A., Chesta O. I., Glushchenko L. A.,* **The analysis of opportunities of physical modeling of the radiating objects in space with use of LEDs of infrared range. PP. 104–110** The possibility of application of LEDs for physical modeling of the IR-radiating objects is considered. The main properties of Infrared range LEDs are analyzed, the example of calculation of the quantity of LEDs necessary for modeling of the dot object with the set radiation characteristics is presented. **Keywords:** the power radiation, Infrared range LEDs

*Poljakov V. V., Dashkin E. R.* **A comprehensive mathematical model of the processed signalov technogenic space objects in a matrix photodetector opto-electronic sistem. PP. 111–119**. The proposed new integrated mathematical model is processed in optical-electronic sistem signals of anthropogenic comic objects that is different from the known signal models because it takes into account the procedure for reading the images from the optical receiver in the form of a matrix of charge-coupled device, distorting the original image. **Keywords:** signal model of the space object, matrix photodetector, the noise of the optical receiver, processing of optical images

*Dzitoev A. M.*, *Lapovok Y. V.*, *Khankov S. I.* **High-rise dependences of power balance and background temperature on the entrance pupil of the telescope remote sensing of the earth. PP. 120–125**. The technique of calculations of dependence of power balance and background temperature on an entrance pupil of the telescope intended for remote sensing of Earth from height over the land surface at continuous observation in a nadir is offered. Researches were conducted for limit cases of placement of an axis of the telescope on the line passing through the centers of the Sun and Earth and when finding the telescope in Earth shadow. The technique can be used for determination of the required size of the compensating power for thermostabilization of the telescope at the set temperature level. **Keywords:** space telescope, remote sensing of Earth, Earth radiation, sunlight, power balance of the telescope, heat stability of optical system.