ABSTRACTS

### ВОПРОСЫ РАДИОЭЛЕКТРОНИКИ

### серия

### ТЕХНИКА ТЕЛЕВИДЕНИЯ

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*Ivanov V. G.*, *Kamenev* *A. A*. **Technology development trends of wide for­mat matrix photodetectors for opto-electronic informing equipment designed for space objects surveillance. PP. 3–10.** Proposals for development directions of perspective wide-format matrix photo-detecting devices for Near-Earth space objects informational opto-electronic observation systems creation technology have been developed. **Keywords**: matrix photodetectors, space objects informational opto-electronic observation systems

*Kamenev A. A.*, *Samorodov A. A.* **Space objects database signature application to realization technology for information support optoelectronic system at various stages of life cycle.** **PP. 11–18.** The necessity of providing background objects database optoelectronic space monitoring situation at various stages of their life cycle, as well as the inclusion of automated data from the background target of the united information space. Keywords:united information space, reflective-emission characteristics, optoelectronic system, space environment, providing background object

*Pshenichnaya O. K.*, *Sergeyev V. V.* **Stabilization of the glide path in the** **Marine television system. PP. 19–24.** The article describes the glide path stabilization principle in the Marine television system for monitoring landing shipborne aircrafts (SAC) on the deck of an aircraft carrier. **Keywords:** glide path, affine transformations, visual landing, shipborne aircrafts

*Borodin D. V.*, *Osipov Yu. V.*, *Vasilyev V. V.* **Homogeneity of the output signal CMOS TDI multiplexers hybrid IR FPA. PP. 25–30.** Discusses the homogeneity of the output signal during full cycle of operation for CMOS devices readout signals from the multi-row IR photodetectors based on CdHgTe diodes with time-delay and analog integration (TDI). On schema formats 4×288 and 6×576 shows the influence of the stray capacitance and the necessity of applying a common node for convert the charge into voltage to obtain a uniform output signal for TDI CMOS circuits with switching current of the detectors. **Keywords:** CMOS, TDI, photodetector, multiplexer

*Strizhnev K. V.*, *Belous D. A.*, *Baranov P. S.*, *Litvin V. T*., *Mantsvetov A. A.*, *Mikhailov V. А.* **The analysis of the dark currents of solid-state image sensors in case of high working temperature. PP. 31–40.** Expressions for values of the dark currents of image sensors executed on CCD and CMOS technologies in case of working temperatures to +130˚ С. It is set that minimum dark currents have CMOS sensors with the active pixel. Electronic shutter mode allows to control values of the dark currents and to minimize their influence on quality of the created image. The experimental studies for different types of image sensors confirmed the received theoretical results. **Keywords:** Solid-state image sensor, the dark current, electronic shutter, fixed pattern noise, CCD, CMOS

*Belous D. A.* **Sensitivity of solid-state image sensor in short wave infrared range in case of high temperature. PP. 41–47.** Dependences of quantum efficiency of solid-state image sensors on the basis of a CCD and CMOS of technologies are received from wavelength in short wave infrared spectral region in the range of temperatures from +50°C to +130°C. It is shown that on wavelength of 940 nanometers increase in quantum efficiency makes 1,1-1,3 times, and on wavelength of 1064 nanometers – from 2 to 5 times, at the same time noise of the dark current increase slightly. Theoretical results are confirmed experimentally on specially developed bench. **Keywords:** Solid-state image sensor, quantum efficiency, integral sensitivity, noise of solid-state image sensor, range of temperatures, width of the forbidden band of silicon

*Perezyabov O.A.*, *Ilinski A. V.*, *Maltseva N. K.* **Optoelectronic system modulation transfer function determination. PP. 48–56.** This article contains the information about the modulation transfer function as the general characteristic of the optoelectronic system resolution and is devoted to the description of the procedure of determination the number of modulation transfer function values using the sum of harmonic function depending on the brightness of the spatial coordinates defined on a finite interval. Procedure computer simulation results are also included. **Keywords:** Resolution, Modulation transfer function, Optoelectronic system, Harmonic function

*Ivanov S. A.*, *Ivanov N. A.* **The protection of acoustic part of confidental videodata from related transfer along optical guiding sustems. PP. 57–63.** When designing building local-area network on the base of fiber-optic communication lines one must consider the information security from the leakage of acoustic speech information. This is due to the local area network being a spatially distributed acoustic signal converter based on optical guiding systems and refer to vibro-acoustic channels of information leakage. The article considers methods of protection acoustic speech information from leakage on optical guiding systems and their disadvantages. **Keywords**: fiber optic communication line, spatially distributed transducer of acoustic signals, fiber optic receiver of acoustic signals, fiber optic receiver of audio, acoustic speech information protection.

*Balanin L.N.* **Optical recording in TV production and storage of content. PP. 64–69.** A brief review of the current state of the optical recording technology based on Blu-ray. Specifications of a new generation of laser discs are presented. **Keywords**: optical recording, laser disc, data archiving

*Kovin S D*.  **The approach to solving the problem of classification of objects in the multispectral systems of aeronautical television**. PP. 70–77. The approach to solving the problem of classification of objects in the aeronautical television multispektral systems is considered. **Keywords**: classification of objects, multispectral systems, aviation television, recognition system

*Sagdullaev T. Yu.*, *Sagdullaev V.Yи*. **The approach to assessing the quality of volumetric multispectral television systems. PP.78–85.** The approach to assessing the effectiveness of information content and systems volumetric multispectral television, as well as the classification of ways to display the volume multispectral video.  **Keywords:** System volume multispectral television, distinc­tiveness information, information, and the effectiveness of systems, video display

*Dvornikov S. V.*, *Agievich S. N.*, *Gulidov A.  A.* **Method of virtual jamming satellite TV channels and proposals for the assessment of its effectiveness. PP. 86–93.** The problems of the development of scientific and methodological apparatus for evaluating the effectiveness of jamming of satellite TV subscribers in operator training mode. **Keywords**: assessment of the effectiveness of jamming, virtual jamming mode, satellite TV, operator training.

*Dvornikov S. V.*, *Fokin G.A.*, *Al-odhari A. H.*, *Fedorenko I. V.* **Synthesis of multi-position signals for space television. PP. 94–99.** In this paper, we estimate the effect of the topology of the location of radiation receiving points on the accuracy of determining the location of signal sources. A measure of such an estimate is proposed in the form of a geometric factor for reducing accuracy. A computational model of the positioning estimation for the difference-range method based on the Newton-Gauss algorithm is obtained. The results of modeling. **Keywords**: difference-ranging method, geometric factor of accuracy decrease, Newton-Gauss algorithm, location determination, radio source

*Salata D. V.*, *Tolochkov D. V.* **Mathematical model following control systems. PP. 100−105.** A mathematical model of engine control is considered, which is one of the main elements in the creation of gyrostabilized platforms used to stabilize television systems. **Keywords**: control system, image stabilization, gyrostabilized platform, mathematical model, position sensors

*Khankov S. I.* **Thermal balance of the payment with local thermal emission source. PP. 106–111.** The technique and results of calculations of temperature of the compact fuel element of the electric circuit installed with thermal contact on a rectangular payment which is in turn established with thermal contact on the thermostabilized case are presented. At the heatisolated surfaces of a payment influence on temperature of the fuel element of his shift concerning the center of a payment to her edge is investigated. **Keywords:** radio-electronic equipment, thermal mode, electric circuit, printed circuit board, fuel elements

*Karev M. S*. **The influence of external destructive influences on the change in characteristics of the optical sensors of the motion control system of the spacecraft. PP. 112–117.** In the article the results of studying the changing characteristics of the optical sensors of the motion control system of the spacecraft in the conditions of influence of various destructive influences. The results obtained are necessary for the evaluation of the error determination of the angular position of the spacecraft. Given mathematical relationships, taking into account the effect of damage to optical elements on the depth of the optical path. **Keywords:** spacecraft, the motion control system, destructive factors, the optical sensor