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Descrizione fisica	1 online resource (X, 198 p. 106 illus., 66 illus. in color.)
Collana	Innovation and Discovery in Russian Science and Engineering, , 2520-8047
Disciplina	004
Soggetti	Electrical engineering Microwaves Optical engineering Data structures (Computer science) Wireless communication systems Mobile communication systems Manufactures Communications Engineering, Networks Microwaves, RF and Optical Engineering Data Structures and Information Theory Wireless and Mobile Communication Manufacturing, Machines, Tools, Processes
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di contenuto	Hypercomplex algebras as unified language for image processing and pattern recognition. Part 1. Cliffordean models of multichannel images -- Influence of the reflections from the clouds and artificial structures on the fire detection from space -- Reconfigurable systolic 2D-arrays of bit-level processor elements for high speed data processing in embedded computer systems -- Image fusion based on wavelet transformation -- Many factor MIMO-Filters -- Examination of clarification effect under the colorimetric object illumination -- Peculiarities of application of multifractal analysis to simultaneously

recorded biomedical signals -- Methods of autonomous indoor 3D navigation -- Investigation of money turnover in the computer agent-based model -- Application of the process parameters analysis tree for the melting process stability control -- Artificial neural networks as an interpolation method for estimation of chemical elements contents in the soil -- Five-module concept of modernization of urban passenger transport management -- Green's functions of multilayer cylindrical structures and their application to radiation, propagation and scattering problems -- Compact topologies of microstrip ring coupler -- Analysis of spherical and geodesic antenna radomes by Green's function method -- Comparative analysis of TE<sub>01</sub> mode excitation methods in circular waveguides -- Features of antenna-applicator for functional studies of the human brain -- Multifractal Nature of the Brain Microwave Radiation Signals.

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### Sommario/riassunto

The book is devoted to problems of information technologies (description and processing signals, especially ones corrupted by noises and disturbances) and to problems of telecommunications and production of advanced equipment in radio-electronics developed at the Ural Federal University, Ekaterinburg, Russia. It describes the contemporary state of the art and the development of methods for solving problems of signal processing and building equipment for practical solutions. The volume is mainly a collection of ideas, techniques and results in the field of video information technologies and various related applications of numerical methods. It comprises 18 chapters grouped under four main topics: image processing and computer vision, signal processing and navigation, simulation of some practical processes and computations for antennas, and applications of microwaves. The research described in this volume is addressed to a wide audience of scientists, engineers and mathematicians involved in the above mentioned four scientific topics. Pairs all topics presented with practical problems in the mentioned areas; Describes in detail the formulations of the problems; Gives recommendations for solving problems through building computational algorithms; Presents best practices for production of the corresponding engineering equipment.

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