

Information technology of remotely sensed optical image analysis on the basis of multiscale conceptions integration

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Abstract:

A methodological approach is proposed to process and analyze the data from optical systems for remote sensing of the Earth. The approach is based on the systemic integration of four conceptual ideas: fractal sets; recursive expansions; continuous wavelet transforms; discrete wavelet transforms and allows to improve the efficiency of detection of anomalous signals in a complex target environment.

Keywords: Remotely Sensed Optical Image Analysis, remote sensing of the Earth, continuous wavelet transforms, fractal sets, recursive expansions

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[Access full text \(in Russian\)](#)

References:

- [1] Alexandrov VV, Gorsky ND. Image representation and processing: A recursive approach. Dordrecht, Netherlands: Springer; 1993. ISBN: 978-94-010-4766-1.
- [2] Mandelbrot BB. The fractal geometry of nature. New York: W.H. Freeman and Co; 1982. ISBN: 978-0-7167-1186-5.
- [3] Potapov AA. Fractals in radio physics and radio location: sampling topology [In Russian]. Moscow: "Universitetskaya Kniga" Publisher; 2005.
- [4] Bagmanov VH, Sultanov AH, Meshkov IK. Experimental study of scale-invariant data structure of satellite surveillance systems [In Russian]. Proceedings of the 6th Conference "Problems of Technique and Technology of Telecommunications" 2005: 96-98.
- [5] Bagmanov VH, Sultanov AH. Synthesis of filters for image processing with fractal structure. Computer Optics 2005; 28: 156-159.
- [6] Dremine IM, Ivanov OV, Nechitailo VA. Wavelets and their uses. Phys Usp 2001; 44: 447-478. DOI: 10.1070/PU2001v044n05ABEH000918.
- [7] Tikhonov VI. Statistical radio engineering [In Russian]. Moscow: "Radio i Svyaz" Publisher; 1982.
- [8] Bagmanov VH. Multiscale approach to filtering signals with a fractal structure based on wavelet transforms [In Russian]. Vestnik UGATU 2004; 5(2:10): 209-212.