

SIGNALS WITH THE IMPROVED CHARACTERISTICS ON THE BASIS OF BARKER'S SEQUENCES FOR THE APPLICATION IN THE ACOUSTIC SYSTEMS

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ABSTRACT

Application of complex phase-manipulation signals, such as M-sequence, in acoustic systems is caused by their properties. The main of them is an opportunity of allocation on a background of noise as a result of correlation processing. And the effect of allocation in terms of power is proportional to the signal base or, at the fixed strip, to its duration. However, reduction of length of sequence is principal in performing of some missions. Monitoring of quickly varying processes, reduction of a dead zone in communication, hydrolocation and positioning systems, reduction of pulse volume and exposition time in research of inhomogeneities, especially biological origin, are among such missions. Usually in such missions sufficient signal/noise ratio is provided. For improvement of correlation properties short phase-manipulation sequences can be modified, introducing peak manipulation. The article applies such approach to Barker's sequences. Nonlinear transformation and smoothing by time window is offered to decrease the peak-factor. Compound signals for distance measuring and respiratory acoustics are considered as the examples of modified sequences.

Key words: ocean acoustic tomography, complex signals, phase-manipulation signals, Barker's sequences, correlation properties.

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