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BORDER WAVES IN THE PROBLEM OF DETECTING UNDERWATER NOISE SOURCES

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**ABSTRACT**

A brief historical overview of the methods for detecting underwater sources and a critical analysis of the possible detection range are given. Certain doubts are discussed regarding the adequacy of the classical interpretation of cross-border (near-surface or near-bottom) propagation of sound waves and the effect of a soft screen on the process of detecting noise sources. An alternative point of view based on the use of non-self-adjoint model formulation of boundary value problems in acoustics of layered media is substantiated. Examples of the long-range propagation of sound waves due to the excitation of boundary waves of a generalized type by the complex angular spectrum of a source are given. Examples of using a combined receiver in the shallow sea in the infrasonic frequency range and assessing its noise immunity as a promising receiver of noise signals in the infrasonic range are given.

**Key words:** non-self-adjoint model formulation, generalized normal waves, invariant, soft screen, combined receiver (acoustic vector sensor).

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