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PROCEEDINGS

Integrated Calculation of Acoustic Radiation and Propagation of Underwater Elastic Structures Based on the Simple Source Boundary Integral Equation

Lingwen Jiang[1] and Mingsong Zou[2,*]

[1] China Ship Scientific Research Center, No. 222 East Shanshui Road, Wuxi, 214082, China
[2] State Key Laboratory of Deep-sea Manned Vehicles, No. 222 East Shanshui Road, Wuxi, 214082, China
[*] Corresponding Author: Mingsong Zou. Email: zoumings@126.com

ABSTRACT

Acoustic radiation and propagation characteristics of underwater elastic structures are an organic whole, which should be considered comprehensively. Based on the three-dimensional sono-elasticity theory of ships, the integrated calculation method of acoustic radiation and propagation in ocean environment is realized by using the simple source boundary integral equation. The correctness and accuracy of the method are verified by a series of examples. Based on the domestic supercomputer platform, the parallel transformation of the algorithm is completed, and the two-level multi-core parallel is realized, which greatly improves the computing efficiency. The application of acoustic radiation calculation in composite structures is carried out. This calculation method can not only provide guidance for low noise optimization design of underwater elastic structures, but also lay a foundation for real-time calculation of radiated sound field in ocean environment.

KEYWORDS

Ocean environment; acoustic radiation; acoustic propagation; simple source boundary integral equation

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