



Contribution ID: 251

Type: **Sectional reports**

## Usage of the distributed computing system in the recovery of the spectral density of sea waves

*Monday 10 September 2018 13:45 (15 minutes)*

This article presents a task of the recovery of the spectral density of sea waves in the linear case. Creation of the onboard ship system giving the current information about sea state and weather forecast in the navigation area is one of the most urgent problem. Weather forecast can be based on the analysis of the sea waves spectral density change. Evaluation of the sea wave spectral density is solved on the basis of indirect dynamic measurements of vibrational motion of the marine dynamic object in a seaway. The first researcher to raise the wave parameter identification problem on the basis of object behavior was Y. Nechaev [Nechaev Y. I., The collection of reports on the scientific and technical conference on experimental fluid mechanics (1990)], [Nechaev Y. I., Navigation and Hydrography 3 (1996)]. Over the past fifteen years, this problem has become rather popular and the works of Nielsen [Nielsen U. D., Stredulinsky D. C., Proceedings of the 12th International Ship Stability Workshop, pp.61-67 (2011)], Simons [Simons A. N., Tannuri E. A., Sparano J. V., Matos V. L. F., Applied Ocean Research v.32, i.2, pp.191-208 (2010)], Pascoal [Pascoal R., C. Guedes Soares., Ocean Engineering v.36, i.6-7, pp.477-488 (2009)] and others are of the most significance. Nevertheless, despite of researches large number it is still impossible to speak of an acceptable effective solution to this problem. The recovery of the sea waves on the basis of the behavior of the marine dynamic object requires the analysis and processing of large amounts of information. To improve the accuracy of identification requires using different algorithm of recovery and a large number of test calculations. The calculations should be made in real time. The system should also store processed data and provide access at any time. The software should have the fault-tolerance property, i.e. the software should continue to work in the case of failure of one of the parts. All these requirements and features make us to use distributed computing system for developing software of the solution of the problem.

**Author:** BUSKO, Ilya (SPSU Faculty of Applied Mathematics and Control Processes)

**Presenter:** BUSKO, Ilya (SPSU Faculty of Applied Mathematics and Control Processes)

**Session Classification:** Scientific, industry and business applications in distributed computing systems, education

**Track Classification:** 4. Scientific, industry and business applications in distributed computing systems