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A New Estimation Method of Wind Forces and Moments acting on Ships on the basis of Physical Component Models

Toshifumi Fujiwara, Michio Ueno and Yoshiho Ikeda

Summary: A new method to estimate longitudinal and lateral wind forces, and yaw and heel moments for ships is presented in this paper. The proposed estimation procedure is based on physical component models of the wind loads acting on ships. It is assumed that the wind forces consist of longitudinal- and cross-flow drags, and lift and induced drags. The wind moments are obtained by crossing the moment lever to the lateral wind force. Each term of the components in the estimation equations is decided by the regression analysis using many wind tunnel experimental data. This estimation method has the same accuracy level to the authors' previous method, which was more accurate than the earlier reported prediction methods, and has more rational and simple forms of estimation rather than the previous one.

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