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## **The Preliminary Design of a Ship Considering the Performance in Actual Seas**

### **-Approximation of Resistance Increase in Short Waves and its Application to Ship Design-**

Masafumi Miyamoto

(Accepted November 29, 2007)

**Summary:** It is very important to estimate the propulsive performance in actual seas, when designers select the principal dimensions of hull and main engine with the reasonable sea margin, from the viewpoint of ship economics. The author reported in the previous papers a new method to evaluate the influence of fouling, aging and resistance increase due to waves on ship performance. In the present paper, an approximation formula to estimate resistance increase in short waves is proposed, and several simulations using the present formula and the previous method are carried out. These results showed the influence of principal particulars on the performance in actual seas is different with the judging point of sea trial, voyage in waves and long term voyage after delivery, in addition to the judging item of propulsive performance such as speed decrease or fuel oil consumption.

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