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Study on Multiobjective Hull Optimization for Reducing Resistance in Still Water and Added Resistance in Waves
-Multiobjective Optimization using Real-coded Genetic Algorithm-

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Summary: Practical ships need to have low total resistance in waves. The present paper proposes a hull optimization method for reducing resistance in still water and added resistance in wave, using the real-coded genetic algorithms. The real-coded genetic algorithm of the optimization method, employs the crossover operator for combining of the methods called the LUNDX-*m*(UNDX on m Latent Variables) and the EDX (Extrapolation-Directed Crossover), and employs the modified POSS (Pareto Optimal Selection Strategy) as a generation-alternation model. The panel-shift type Rankine source method is used for the calculation of wave-making resistance. The estimate formula based on statistical analysis is used for the form factor. Takahashi's formula and Maruo's formula are used for added resistance in waves. The hull optimization for KRISO 3000TEU container ship is carried out using the program which is based on the present method. In the optimization, many Pareto solutions are obtained. It is confirmed that these hull forms have low total resistance in still water and added resistance in waves comparing with the original form.

[PDF (843K)] [References]

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