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ISBN	3-030-30607-0
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Descrizione fisica	1 online resource (267 pages)
Disciplina	620.00151
Soggetti	Mathematical models Mechanical engineering Computational intelligence Mathematical Modeling and Industrial Mathematics Mechanical Engineering Computational Intelligence
Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Mathematical Modeling -- Resistance and Dynamic Trim Modeling -- Propeller’s Open-Water Efficiency Modeling -- Additional Resistance Components and Propulsive Coefficients -- Power Modeling -- Concluding Remarks -- Resistance and Dynamic Trim Predictions -- Propeller’s Open-Water Efficiency Prediction -- Power Prediction.
Sommario/riassunto	The proposed book addresses various power prediction methods, a principal design objective for high-speed craft of displacement, semi-displacement, and planing type. At the core of the power prediction methods are mathematical models based on experimental data derived from various high-speed hull and propeller series. Regression analysis and Artificial Neural Network (ANN) methods are used as extraction tools for this kind of models. The most significant factors for in-service power prediction are bare hull resistance, dynamic trim, and the propeller’s open-water efficiency. Therefore, mathematical modeling of these factors is a specific focus of the book. Furthermore, the book includes a summary of most of the power-prediction-relevant literature

published in the last 50 years, and as such is intended as a reference overview of the best high-speed craft modeling practices. Once these mathematical models have been developed and validated, they can be readily programmed into software tools, thereby enabling the parametric analyses required for the optimization of a high-speed craft design. The proposed book is intended primarily for naval architects who design and develop various types of high-speed vessels (yachts, boats etc.), as well as for students who are interested in the design of fast vessels. The book includes useful Excel Macro Codes for the outlined mathematical models. Moreover, software for all considered models is provided.