Book review

HYDRODYNAMICS OF HIGH-SPEED MARINE VEHICLES.

Odd M. Faltinsen. Cambridge University Press, Cambridge, UK, 2006. ISBN 0521 845688, £55, 454 pp.

Odd Faltinsen has been working on the hydrodynamics of high-speed marine vehicles for many years and the depth and breadth of material contained in the 454 pages of this book impressively demonstrates not only his mastery of this area but also his ability to communicate that knowledge.

The book covers monohulls, multihulls, small waterplane area twin hull (swath), wavepiercers, hydrofoils, surface effect ship (ses), hovercraft and to a limited extent wing in ground effect (wig) craft. The hydrodynamics considered include: resistance, propulsion, seakeeping, ride quality, slamming, springing, planing and manoeuvring. The methodologies discussed range from simple analogies to computational fluid dynamics and hydroelasticity.

In his preface Faltinsen states that he set out 'to start from basic fluid dynamics and to link this to practical issues for high-speed vessels' and 'mathematics is a necessity', but he has 'tried to avoid this when physical explanations can be given'. He has succeeded in providing the rigorous background mathematics required for detailed analysis and understanding, while also presenting the subject in a simple descriptive way that is very concisely written and is packed with interesting insights into the behaviour of these craft.

In the preface the author also states that 'A knowledge of calculus ... is necessary to read the book in detail. The reader should also be familiar with dynamics and basic hydrodynamics'. The manuscript should certainly be understandable by students progressing through a naval architecture course. Engineers and scientists from other disciplines should, providing they have the required grounding in hydrodynamics, also be able to understand the material; some knowledge of ordinary ship hydrodynamics will help the reader but is not a prerequisite to reading and understanding the book because the relevant foundation of ordinary ship hydrodynamics is described within the text. It may indeed be more interesting to learn about ship hydrodynamics from this book than to use a text which concentrates solely on ordinary displacement ships.

Students will find the book useful: as background reading to their taught courses, as a reference for individual and group projects, and as reading at the beginning of many a PhD study, for which the extensive referencing will also be very useful.

Practising naval architects with an involvement in high-speed craft will find the book invaluable, both for the clear descriptions of the phenomena and the extensive referencing noted above. I enjoyed reading this book and I am sure I will often refer to it.

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