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| Soggetti | Ships - Hydrodynamics Stability of ships Electronic books. |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Cover; Contents; Preface; Acknowledgements; Definitions, principal dimensions; Introduction; Marine terminology; The principal dimensions of a ship; The definition of the hull surface; Coordinate systems; Graphic description; Fairing; Table of offsets; Coefficients of form; Summary; Example; Exercises; Basic ship hydrostatics; Introduction; Archimedes' principle; A body with simple geometrical form; The general case; The conditions of equilibrium of a floating body; Forces; Moments; A definition of stability; Initial stability; Metacentric height; A lemma on moving volumes or masses Small angles of inclination A theorem on the axis of inclination; Metacentric radius; The curve of centres of buoyancy; The metacentric evolute; Metacentres for various axes of inclination; Summary; Examples; Exercises; Appendix -Water densities; Numerical integration in naval architecture; Introduction; The trapezoidal rule; Error of integration by the trapezoidal rule; Simpson's rule; Error of integration by Simpson's rule; Calculating points on the integral curve; Intermediate ordinates; Reduced ordinates; Other procedures of numerical integration; Summary; Examples; Exercises Hydrostatic curves Introduction; The calculation of hydrostatic data; Waterline properties; Volume properties; Derived data; Wetted surface |

area; Hydrostatic curves; Bonjean curves and their use; Some properties of hydrostatic curves; Hydrostatic properties of affine hulls; Summary; Example; Exercises; Statical stability at large angles of heel; Introduction; The righting arm; The curve of statical stability; The influence of trim and waves; Summary; Example; Exercises; Simple models of stability; Introduction; Angles of statical equilibrium; The wind heeling arm; Heeling arm in turning
Other heeling arms
Dynamical stability; Stability conditions - a more rigorous derivation; Roll period; Loads that adversely affect stability; Loads displaced transversely; Hanging loads; Free surfaces of liquids; Shifting loads; Moving loads as a case of positive feedback; The stability of grounded or docked ships; Grounding on the whole length of the keel; Grounding on one point of the keel; Negative metacentric height; The limitations of simple models; Other modes of capsizing; Summary; Examples; Exercises; Weight and trim calculations; Introduction; Weight calculations; Weight groups
Weight calculations
Trim; Finding the trim and the draughts at perpendiculars; Equilibrium at large angles of trim; The inclining experiment; Summary; Examples; Exercises; Intact stability regulations I; Introduction; The IMO code on intact stability; Passenger and cargo ships; Cargo ships carrying timber deck cargoes; Fishing vessels; Mobile offshore drilling units; Dynamically supported craft; Container ships greater than 100m; Icing; Inclining and rolling tests; The regulations of the US Navy; The regulations of the UK Navy; A criterion for sail vessels
A code of practice for small workboats and pilot boats

Sommario/riassunto

The hydrostatic approach to ship stability aims to balance idealized ship weight against buoyancy forces. This textbook is a complete guide to understanding ship hydrostatics in ship design and ship performance. Adrian Biran guides readers from first principles through basic and applied hydrostatic and ship stability theory, and introduces contemporary mathematical techniques for hydrostatic modelling and analysis. Real life examples of the practical application of hydrostatics are used to explain the theory and calculations; and to illustrate the effect shifting weights and central
