

Preface

Masses that are added to a ship's bulk will determine the inertial properties of that ship under motion. Computation of the effect of such added masses of various bodies has been the subject of many journal articles, as well as chapters in various textbooks and research monographs on theoretical and applied hydrodynamics. This book is part of that literature.

The present volume is a revised translation of the second edition of the author's book "Added masses of ship structures" published in 2007 in Russian by Morwest Publishers (St. Petersburg). The first Russian edition was published in 1986; in the second edition the author also reviewed results obtained in this field over the intervening 20 years.

In particular, we included a brief overview of existing numerical methods for determination of added masses (Chap. 9). The well-developed numerical methods allow us to go far beyond pure theoretical considerations which give explicit results only for simple models. However, in many cases, for practical engineering purposes one needs to know the dependence of various added masses on the main parameters of the system for various models. In particular, these model cases can be used to verify the accuracy of numerical results.

It is the purpose of this book to collect the main theoretical results on added masses and to describe some experimental methods of their determination; we hope that it can serve as a useful tool to engineers dealing with various structures moving in fluid. Besides marine engineering, this book can be used in machine engineering, aviation engineering and hydrotechnique studies.

The author would like to offer an apology to the reader for a certain notational inconsistency: the period is used in decimal numbers in the main text of the book. However, the comma is used for the same purpose in pictures which were inherited from the Russian edition of the book. To avoid a tedious process of re-drawing these figures we assume $0.5 = 0, 5 = 1/2$ in this book; we hope this inconsistency will not confuse the reader significantly.

Some sections of this reference book were written by other authors. Sect. 9.6 is written by V.S. Boyanovskij and O.I. Babko; Sect. 4.1—by Yu.V. Gurjev; Sects. 7.1, 7.2—by E.I. Ivanjuta; Sect. 2.6—by A.I. Nemzer; Sect. 9.5—by S.N. Okun'jov, Sect. 7.4—by A.S. Samsonov; Sect. 6.10—by V.N. Fedorov; Chap. 6 and Sect. 8.3—by E.N. Schukina, Sect. 5.14—by I.V. Sturova and E.V. Ermanjuk; Sect. 8.5—by A.M. Vishnevskij, A.J. Lapovok and S.A. Kirillov.

I.V. Sturova made several important comments on Chap. 5 of the Russian edition; these comments are taken into account in the English edition of the book.

The second Russian edition was published due to friendly recommendations of A.S. Ginevskij.

I express my deep gratitude to N.A. Sizova who prepared the second Russian edition for publication. Finally, I thank D. Korotkin who edited both the content and the language of the English version of the book.

St. Petersburg

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