## **Navier-Stokes Equations**

### Chicago Lectures in Mathematics Series

J. Peter May, Robert J. Zimmer, and Spencer J. Bloch, Editors

Other Chicago Lectures in Mathematics titles available from The University of Chicago Press:

The Theory of Sheaves, by Richard G. Swan (1964). Topics in Ring Theory, by I. N. Herstein (1969) Fields and Rings, by Irving Kaplansky (1969; 2d ed. 1972) Infinite Abelian Group Theory, by Phillip A. Griffith (1970) Topics in Operator Theory, by Richard Beals (1971) Lie Algebras and Locally Compact Groups, by Irving Kaplansky (1971) Several Complex Variables, by Raghavan Narasimhan (1971) Torsion-Free Modules, by Eben Matlis (1973) The Theory of Bernoulli Shifts, by Paul C. Shields (1973) Stable Homotopy and Generalized Homology, by J. F. Adams (1974) Commutative Rings, by Irving Kaplansky (1974) Banach Algebras, by Richard Mosak (1975) Rings with Involution, by I. N. Herstein (1976) Theory of Unitary Group Representation, by George W. Mackey (1976) Infinite-Dimensional Optimization and Convexity, by Ivar Ekeland and Thomas Turnbull (1983)

Commutative Semigroup Rings, by Robert Gilmer (1984)

## **Peter Constantin and Ciprian Foias**

# Navier-Stokes Equations

The University of Chicago Press Chicago and London

PETER CONSTANTIN is professor of mathematics at the University of Chicago. CIPRIAN FOIAS is Distinguished Professor of Mathematics at Indiana University.

The University of Chicago Press, Chicago 60637 The University of Chicago Press, Ltd., London

© 1988 by The University of Chicago All rights reserved. Published 1988 Printed in the United States of America 97 96 95 94 93 92 91 90 89

#### Library of Congress Cataloging-in-Publication Data

Constantin, P. (Peter), 1951-

Navier-Stokes equations / Peter Constantin and Ciprian Foias.

5432

CIP

cm.—(Chicago lectures in mathematics)

Bibliography: p.

Includes index.

1. Navier-Stokes equations. I. Foias, Ciprian. II. Title.

III. Series.

QA374.C655 1989

515.3'53-dc19 88-13122

ISBN 0-226-11548-8. ISBN 0-226-11549-6 (pbk.)