

Encyclopaedia of Mathematical Sciences

Volume 20

Editor-in-Chief: R. V. Gamkrelidze

A. L. Onishchik (Ed.)

Lie Groups and Lie Algebras I

Foundations of Lie Theory
Lie Transformation Groups



Springer-Verlag Berlin Heidelberg GmbH

Consulting Editors of the Series:
A. A. Agrachev, A. A. Gonchar, E. F. Mishchenko,
N. M. Ostianu, V. P. Sakharova, A. B. Zhishchenko

Title of the Russian edition:
Itogi nauki i tekhniki, Sovremennye problemy matematiki,
Fundamental'nye napravleniya, Vol. 20,
Gruppy Li i Algebry Li 1
Publisher VINITI, Moscow 1988

Mathematics Subject Classification (1991):
17Bxx, 22XX, 22Exx, 53C30, 53C35, 57Sxx, 57Txx

ISBN 978-3-540-61222-3

Library of Congress Cataloging-in-Publication Data

Gruppy Li i algebry Li I. English. Lie groups and Lie algebras I / A. L. Onishchik, ed. p. cm. - (Encyclopaedia of mathematical sciences; v. 20) Translation of original Russian, issued as v. 20 of the serial: Itogi nauki i tekhniki.

Sovremennye problemy matematiki. Fundamental'nye napravleniya.

Includes bibliographical references and index. Contents: Foundations of Lie theory / A. L. Onishchik, E. B. Vinberg - Lie groups of transformations / V. V. Gorbatsevich, E. B. Vinberg.

ISBN 978-3-540-61222-3 ISBN 978-3-642-57999-8 (eBook)

DOI 10.1007/978-3-642-57999-8

1. Lie groups. 2. Lie algebras. I. Onishchik, A. L. II. Onishchik, A. L. Foundations of Lie theory. 1993.
- III. Gorbatsevich, V. V. Lie groups of transformations. 1993. IV. Title. V. Series.

QA387.G7813 1993 512'.55-dc20

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

© Springer-Verlag Berlin Heidelberg 1993

Originally published by Springer-Verlag Berlin Heidelberg New York in 1993

Softcover reprint of the hardcover 1st edition 1993

List of Editors, Authors and Translators

Editor-in-Chief

R. V. Gamkrelidze, Russian Academy of Sciences, Steklov Mathematical Institute,
ul. Vavilova 42, 117966 Moscow, Institute for Scientific Information (VINITI),
ul. Usievicha 20 a, 125219 Moscow, Russia

Consulting Editor

A. L. Onishchik, Yaroslavl University, Sovetskaya ul. 14, 150000 Yaroslavl, Russia

Authors

V. V. Gorbatshevich, Moscow Institute of Aviation Technology, 27 Petrovka Str.,
103767 Moscow, Russia

A. L. Onishchik, Yaroslavl University, Sovetskaya ul. 14, 150000 Yaroslavl, Russia
E. B. Vinberg, Chair of Algebra, Moscow University, 119899 Moscow, Russia

Translator

A. Kozłowski, Toyama International University, Toyama, Japan

Contents

I. Foundations of Lie Theory

A. L. Onishchik, E. B. Vinberg

1

II. Lie Transformation Groups

V. V. Gorbatsevich, A. L. Onishchik

95

Author Index

231

Subject Index

232