

Preface

Except for the occasional terminology, this book is a word for word reproduction of the notes drafted in 1973–1974 for a course given at the *Écoles Normales Supérieures* of Paris and Sèvres (subsequently merged into one). They were published in 1982 by the Department of Mathematics of the University of Paris VII for a necessarily limited distribution. Twenty years later, it seemed appropriate to entrust Springer-Verlag with the task of turning them into a book, its means of distribution being of an altogether different order. Strictly speaking, it only requires some basic knowledge of general topology and linear algebra, but it is mainly aimed at master's students in mathematics. On the whole, the subject matter falls under the general theory of Lie groups or, in the first two chapters, of topological groups. The reader may find some parts of chapters IX, X, XI and XII of my *Analysis III and IV* (Springer, 2015) helpful—referred to as MA IX, MA X, etc. To probe further, in other words to delve into the theory of semisimple Lie groups and algebras, would have required hundreds of additional pages. There are several books on the subject written by excellent specialists, notably those of Varadarajan and Knapp mentioned at the beginning of Chap. 4, as well as the relevant chapters in N. Bourbaki; attempting to improve on these would be somewhat foolish.

It is now about fifty years since I discovered Claude Chevalley's *Theory of Lie Groups* (Princeton UP, 1947), a book that continues to be available and relevant, and in which he once and for all established this theory and more generally that of manifolds from a decidedly global viewpoint. This viewpoint is still adopted in a virtually unchanged form after more than half a century of often rather nebulous developments. Some forerunners should nonetheless be mentioned: Von Neumann (see Chap. 3), Hermann Weyl and his theory of compact Lie groups, and to some extent, Elie Cartan, and Lev Pontryagin's book on topological groups. Apart from being a great mathematician, Chevalley embodied for me all that is anti-pedantic, and above all was a great friend. This book, the outcome of a great revelation, is dedicated to his memory.

Paris, France
March 2003

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<http://www.springer.com/978-3-319-54373-4>

Introduction to the Theory of Lie Groups

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2017, IX, 293 p., Softcover

ISBN: 978-3-319-54373-4