Introduction to
differential topology

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Preface

The aim of this book is to describe the basic geometric methods of differential topology. It is intended for students with a basic knowledge of analysis and general topology.

We prove embedding, isotopy and transversality theorems, and discuss, as important techniques, Sard's theorem, partitions of unity, dynamical systems, and (following the example of Serge Lang) sprays. We also consider connected sums, tubular neighbourhoods, collars and the glueing together of manifolds with boundary along the boundary.

We have ourselves learned much from the writings of Milnor, as has nearly every young topologist today, and there are traces of this in the text. We have also from time to time drawn on Serge Lang's exemplary exposition [3] – to studiously avoid doing this would certainly not benefit any book about differential topology.

The numerous exercises at the end of each chapter are not always easy for a beginner; they are not used in the text.

We do not discuss analysis on manifolds (Stokes' theorem), Morse theory, the algebraic topology of manifolds or bordism theory. However, we hope that our book will provide a solid basis for a closer acquaintance with these more advanced topics of differential topology.

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