

To my wife Angela for inspiration and constant support

Preface

This book was based on notes which were prepared as a guide for lectures of one semester course on Geometric Mechanics. They were written inside the level of a master course. I started some years ago teaching them at the “Instituto de Matemática e Estatística” of the “Universidade de São Paulo”, and, more recently, at the “Instituto Superior Técnico” of the “Universidade Técnica de Lisboa”.

The spectrum of participants of such a course ranges usually from young Master students to Phd students. So, it is always very difficult to decide how to organize all material to be taught. I decided that the expositions should be self contained, so some subjects that one expects to be interesting for someone, result, often, tedious for others and frequently unreachable for a few ones.

In any case, for young researchers interested in differential geometry and or dynamical systems, it is basic and fundamental to see the foundations and the development of classical subjects like Newtonian and Relativistic Mechanics.

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Waldyr Muniz Oliva