Contents

Chapter 1
Lie Groups

1.1 Definition: A **Lie group** G is a group which is at the same time a differentiable manifold such that the group operations:

$$G \times G \xrightarrow{\text{into}} G \qquad \text{i.e.} \qquad (x, y) \longmapsto x \cdot y$$

and

$$G \longrightarrow G \qquad \text{i.e.} \qquad x \longmapsto x^{-1}$$

are C^∞-maps.

Chapter 2
Differetial geometry over the Lie Groups