

Exercises on Lie groups

Spring term 2018, Sheet 13

Hand in before 10 o'clock on 24th May 2018
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Exercise 1

Show that every connected abelian Lie group is isomorphic with $\mathbb{R}^m \times \mathbb{T}^n$ for some $m, n \in \mathbb{N}$.

Exercise 2

Show that every connected simply connected solvable Lie group is contractible.

Exercise 3

Show that every Lie group is homotopic to a compact Lie group, making use of the Iwasawa decomposition of semi-simple Lie groups.