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Introduction to Compact Groups

Our website is

`"http://www.mathematik.tu-darmstadt.de/`
`lehrmaterial/SS2006/CompGroups/"`

A *compact group* is a compact T_2-space with a group structure such that multiplication and inversion are continuous.

Among the examples we saw finite groups, the 3 sphere groups, all orthogonal and unitary groups and their closed subgroups. We noted that arbitrary products of compact groups and compact groups. The Cantor space has many compact group structures; one is $(\mathbb{Z}/2\mathbb{Z})^{\mathbb{N}}$, another one the p-adic group of all sequences $(x_n + p^n\mathbb{Z})_{n\in\mathbb{N}} \in \prod_{n\in\mathbb{N}} \mathbb{Z}/p^n\mathbb{Z}$, $x_n \in \mathbb{Z}$, $x_{n+1} \in x_n + p^n\mathbb{Z}$. The p-adic group is a "compactification of the ring of integers."

Program for today. Character groups of abelian groups.