

# Intensive course on topology in physics

Thore Posske<sup>1</sup>

<sup>1</sup>I. Institut für Theoretische Physik, Fachbereich Physik, Universität Hamburg

The last decades of research have determined a pivotal role of topology in the physics of condensed matter systems, emphasized by the Nobel Prize in physics 2016. The quantum Hall effects, topologically protected boundary states, anyons, non-hermitian topological sensors, and topological quantum computing are at the forefront to build promising next-generation quantum technologies.

This structured course with voluntary exercises lays the cornerstones of a topological education and enables graduate students to autonomously proceed mastering aspects of topology within their individual field of interest. The topics to be discussed will be:

- Mathematical foundations: Topology
- Topology in condensed matter physics
- Topological quantum computing

Supportive voluntary exercises will round up the course, extending on the topics outlined above.

The course will also be open to selected interested master students. Please, contact Antonio Negretti ([anegrett@physnet.uni-hamburg.de](mailto:anegrett@physnet.uni-hamburg.de)) or Thore Posske ([tposske@physnet.uni-hamburg.de](mailto:tposske@physnet.uni-hamburg.de)).