

# Topological insulators

**Place and time:** Thursdays, 10:00, room B,  
Institute of Physics, Polish Academy of Sciences al. Lotników 32/46.  
**First lecture:** 4th October 2018  
**Lecturers:** dr hab. Michal Matuszewski  
**Contact:** [mmatu@ifpan.edu.pl](mailto:mmatu@ifpan.edu.pl)  
**Language:** English

Research on topological insulators and related quantum phenomena is one of the most interesting developments in solid state physics in recent years. In this course, basics of topological insulators will be covered. Lectures will be based on “A Short Course on Topological Insulators” by J. K. Asbóth, L. Orszlány and A. Pályi, including:

- The Su-Shrieffer-Hegger model
- Introduction to Berry phase
- Chern number
- Edge states and their properties
- Adiabatic charge pumping
- Time-reversal symmetric topological insulators

**Prerequisites:** Basic quantum physics.

