

Module description

Module title					Abbreviation
Topology in Solid State Physics 11-TFP-161-m01					
Module coordinator			Module offered by		
Managing Director of the Institute of A		pplied Physics Faculty of Physics and Astronomy			
ECTS Method of grading		Only after succ. compl. of module(s)			
6 numerical grade					
Duration Module level		Module level	Other prerequisites		
1 semester		graduate			
Contents					
 Geometric phase in quantum systems Mathematical basics of topology Time-reversal symmetry Hall conductance and Chern numbers Bulk-boundary correspondence Graphene (as a topological insulator) Quantum Spin Hall insulators Z2 invariants Topological superconductors 					
Intended learning outcomes					
The students acquire a theoretical understanding of topological concepts in modern Solid-State Physics. These concepts serve as a basis of many research activities of the Faculty of Physics and Astronomy at the University of Würzburg.					
Courses (type, number of weekly contact hours, language — if other than German)					
V (3) + R (1) Module taught in: German or English					
Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)					
written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or oral examination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English					
Allocation of places					
Additional information					
Workload					
180 h					
Teachir	ng cycle	9			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	rs in			

SI 83

VOEL

Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Physics (2016) Master's degree (1 major) Mathematical Physics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019)

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