

# SFB Class

## Topology in Atoms and Solids

Jens Wiebe, Christof Weitenberg, Ludwig Mathey

Presentations and Lectures  
Thursdays, 4pm – 5.30pm



**SFB**

SFB 925: Light induced dynamics and control  
of strongly correlated quantum systems

# Seminar 66-614

## Topology in Atoms and Solids

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*University of Hamburg*

The event will take place on thursdays, 4pm - 5.30pm. The participants are invited to give presentations.

### A. Schedule

8.4.21	Lecture 1	Topological insulators 1
15.4.21	Lecture 2	Topological insulators 2
22.4.21	Lecture 3	Topological insulators 3
29.4.21	Lecture 4	Topological superconductors 1
6.5.21	Lecture 5	Topological superconductors 2
20.5.21	Lecture 6	Topological superconductors 3
27.5.21	Presentations	
3.6.21	Presentations	
10.6.21	Presentations	
17.6.21	Presentations	
24.6.21	Presentations	
1.7.21	Presentations	
8.7.21	Presentations	

Presentation	Literature
Detection of Geometric Phases	BMKNZ, Ch. 10
Detection of QSH	M. König, <i>et al.</i> , Science 318, 766, (2007); B + H, Ch. 9; S, Ch. 7.2.2
Quantum Hall Effect	BMKNZ, Ch. 13
An Aharonov-Bohm interferometer for determining Bloch band topology	L. Duca, T. Li, M. Reitter, I. Bloch, M. Schleier-Smith, U. Schneider, Science 347, 288 (2015)
Experimental reconstruction of the Berry curvature in a Floquet Bloch band	N. Fläschner, B. S. Rem, M. Tarnowski, D. Vogel, D.-S. Lühmann, K. Sengstock, and C. Weitenberg, Science 352, 1091 (2016)
Experimental observation of the quantum anomalous Hall effect in a magnetic 3D topological insulator	C.-Z. Chang et al., Science 340, 167 (2013); B + H Ch. 15
Signatures of Majorana fermions in semiconductor nanowires coupled to superconductors	V. Mourik et al., Science 336, 1003 (2012); vOPP Ch. 4
Signatures of Majorana fermions in ferromagnetic chains coupled to superconductors	S. Nadj-Perge et al., Science 346, 602 (2014); vOPP Ch. 5

Literature item	Abbreviation
Bernevig and Hughes, <i>Topological Insulators and Topological Superconductors</i>	B+H
Bohm, <i>et al.</i> , <i>The Geometric Phase in Quantum Systems</i>	BMKNZ
Stanescu, <i>Topological Quantum Matter and Quantum computation</i>	S
F. von Oppen, Y. Peng, and F. Pientka, Topological superconducting phases in one dimension. Topological Aspects of Condensed Matter Physics: Lecture Notes of the Les Houches Summer School (Oxford University Press, 2017). DOI:10.1093/acprof:oso/9780198785781.003.0009	vOPP