



Topological Matter

March 28-31, 2023

Tentative Program (as of 07/03/2023)

T: Tutorial / P: Plenary / I: Invited / O: Oral

Tuesday March 28, 2023

15:00-16:00	Anton Akhmerov (TU Delft, The Netherlands) What it takes to make a Majorana quantum computer	T1
16:00-17:00	Vincent Cros (CNRS-Thales, France) Physics of topological magnetic skyrmions and potential skyrmion-based applications	T2
17:00-17:30	COFFEE BREAK	
17:30-18:30	Ewold Verhagen (AMOLF, The Netherlands) Synthetic magnets, spins, and dimensions: Topological phases in nanophotonics and nanophononics	T3

Wednesday March 29, 2023

08:00-08:45	Registration	
08:45-09:00	Opening ceremony	
Chaiperson: Ewold Verhagen (AMOLF, The Netherlands)		
09:00-09:45	(ONLINE) - Claudia Felser (Max Planck Institute for Chemical Physics of Solids, Germany) Chirality and Topology	P1
09:45-10:00	Anastasios Markou (Max Planck Institute for Chemical Physics of Solids, Germany) Noncollinear magnetic order in epitaxial thin films of Heusler compounds	O1
10:00-10:15	Wassilios Papawassiliou (CEA, France) Detection of Dirac/Weyl Fermions via electron-states resolved NMR crystallography	O2
10:15-10:45	COFFEE BREAK / POSTER SESSION	
SESSION 1: Topological Insulators		
Chaiperson: Nick Kioussis (California State University, USA)		
10:45-11:15	Lia Krusin-Elbaum (The City College of New York - CUNY, USA) Chiral conduction channels in van der Waals topological magnets	I1
11:15-11:30	Aleksandr Kazakov (Institute of Physics, Polish Academy of Sciences, Poland) (111) Pb _{1-x} Sn _x Se TCI epilayers across band inversion point probed by magnetotransport and spin-resolved ARPES	O3
11:30-11:45	Lorenzo Locatelli (CNR-IMM- Agrate Unit, Italy) Large area MOCVD growth of Bi ₂ Te ₃ on top of Sb ₂ Te ₃ to shift the Fermi level close to the Dirac point	O4
11:45-12:00	Beatriz Muñiz Cano (IMDEA Nanociencia, Spain) Experimental observation of a magnetic warping transition in a topological insulator mediated by rare-earth surface dopants	O5
12:00-12:15	Jakob Lindenthal (TU Dresden, Germany) One-dimensional topological interface states: a novel approach for optical pressure sensors	O6
12:15-12:30	Daniel Rosenbach (University of Cologne, Germany) Low-Dimensional Topological Insulator Nanodevices	O7
12:30-13:30	LUNCH	
13:30-14:00	Poster Session 1	
SESSION 2: Topology and light		
Chaiperson: Lia Krusin-Elbaum (The City College of New York - CUNY, USA)		
14:00-14:30	Mohammad Hafezi (University of Maryland, USA) Topological interplay between photons and electrons	I2
14:30-14:45	Alexey Bezryadin (University of Illinois at Urbana-Champaign, USA) Interference, diffraction, and diode effects in superconducting arrays based on Bi _{0.8} Sb _{1.2} Te ₃ topological insulator	O8
14:45-15:00	Carlos Vega (IFF - CSIC, Spain) Topological light-matter interfaces with large topological invariants	O9
15:00-15:15	Francesco Maria Dimitri Pellegrino (University of Catania, Italy) Tunable interface states between Floquet-Weyl semimetals	O10
15:15-15:30	Valentyn Volobuev (Institute of Physics, Polish Academy of Sciences, Poland) ARPES on Surface of Topological Crystalline Insulator Pb _{1-x} Sn _x Se Epilayers with Transition Metal Adsorbates	O11
15:30-16:00	Coffee Break / Poster session	
SESSION 3: Topology in Graphene and other Dirac systems		
Chaiperson: Vincent Cros (CNRS-Thales, France)		
16:00-16:30	Haoyu Hu (DIPC, Spain) Topology in twisted bilayer graphene	I3
16:30-16:45	Zahra Khatibi (Trinity College Dublin, Ireland) Proximity effects in graphene on alloyed transition metal dichalcogenides	O12
16:45-17:00	Olga Arroyo Gascón (Instituto de Ciencia de Materiales de Madrid ICMM-CSIC, Spain) Persistence of symmetry-protected Dirac points at the surface of the topological crystalline insulator SnTe upon doping	O13
17:00-17:15	Erwann Bocquillon (University of Cologne, Germany) Microwave transport in HgTe topological insulators	O14
17:15-18:30	Panel discussion	

Thursday March 30, 2023

SESSION 4: Topological phononics & new concept

Chaiperson: Sergio O. Valenzuela (ICREA/ICN2, Spain)

09:00-09:30	Daniel Lanzillotti Kimura (C2N/CNRS/ Université Paris-Saclay, France) Topological interface mode by simultaneous optical and nanophononic band inversion	I4
09:30-09:45	Omar Florez (ICN2, Spain) Waveguides and sources for topological phononics	O15
09:45-10:00	Anne Rodriguez (C2N, CNRS-Universite Paris Saclay, France) Multiple topological states in nanophononic superlattice devices	O16
10:00-10:15	Helene Spring (TU Delft, The Netherlands) Isotropic 3D statistical topological insulator	O17

10:15-10:45 COFFEE BREAK / POSTER SESSION

SESSION 5: Skyrmions and spin

Chaiperson: Haoyu Hu (Rice University, USA)

10:45-11:15	Nicolas Reyren (CNRS/Thales, France) Non-collinear three-dimensional textures in magnetic multilayers: Hatching of skyrmionic cocoons	I5
11:15-11:30	Sachin Krishna (Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Saclay, France) Engineering spin-orbit torques for efficient skyrmions dynamics	O18
11:30-11:45	Sougata Mallick (Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Saclay, France) Driving skyrmions with high mobility in synthetic ferrimagnets	O19
11:45-12:00	Nicholas Figueiredo-Prestes (Unité Mixte de Physique CNRS/Thales, France) Spin-orbit torques, topological Hall effect, and current induced magnetization reversal in MBE-grown Cr _{1+δ} Te ₂ /Bi ₂ Te ₃ 2D-ferromagnet/topological insulator heterostructure	O20
12:00-12:15	Panagiotis Pappas (NCSR 'Demokritos', Greece) Exploring the creation of topological magnetic structures by interfacial DMI and magnetic field in 2D ferromagnets	O21
12:15-12:30	Jose Hugo Garcia Aguilar (Catalan Institute of Nanoscience and Nanotechnology, Spain) All-electrical spin control in low-symmetry materials	O22

12:30-13:30 LUNCH

13:30-14:00 Poster Session 2

SESSION 6: S2C conversion

Chaiperson: Nicolas Reyren (CNRS/Thales, France)

14:00-14:30	Tobias Kampfrath (Fritz Haber Institute, Germany) Terahertz spin and charge photocurrents in topological spintronic structures	I6
14:30-14:45	Chihun In (Freie Universität Berlin, Germany) Terahertz magneto-photocurrents in the topological insulator Bi ₂ Se ₃	O23
14:45-15:00	Roberto Mantovan (CNR-IMM, Unit of Agrate Brianza, Italy) Development of large-area topological insulators on Silicon for spintronics	O24
15:00-15:15	Aristide Lemaître (C2N - CNRS, France) Spin-momentum locking and spin-charge conversion in ultra-thin epitaxial Bi _{1-x} Sb _x topological insulator	O25
15:15-15:30	Matthias Kronseder (University of Regensburg, Germany) Ferromagnetic resonance for spectroscopic investigation of topological surface states	O26

15:30-16:00 COFFEE BREAK

16:00-16:30 Poster Session 3

SESSION 7: Topology and spin

Chaiperson: Tobias Kampfrath (Fritz Haber Institute, Germany)

16:30-16:45	Amilcar Bedoya-Pinto (Institute of Molecular Science (ICMol), Spain) Connecting Fermi-surface topology and spin-orbit torques in Weyl Semimetal/Ferromagnet Heterostructures	O27
16:45-17:00	Jakub Polaczyński (International Research Centre MagTop, Institute of Physics, Polish Academy of Sciences, Poland) Strain-engineered topological Dirac fermions in epitaxial α-Sn	O28
17:00-17:45	(ONLINE) - Ramamoorthy Ramesh (Vice President for Research at Rice University, USA) A New Era in Ferroelectrics	P2

17:45-20:00 Free time

20:00-22:00 CONFERENCE DINNER

Friday March 31, 2023

Chaiperson: Anton Akhmerov (TU Delft, The Netherlands)		
09:00-09:45	Carlo Beenakker (Universiteit Leiden, The Netherlands) Deconfinement of Majorana vortex modes in a topological superconductor	P3
09:45-10:00	Henry Legg (University of Basel, Switzerland) Majorana bound states in topological insulator nanowire devices	O29
10:00-10:15	Georgios Varelogiannis (National Technical University of Athens, Greece) Quartet-rule-coupling engineering of Majorana fermions in FM-SC heterostructures and topological states in all AFM films	O30
COFFEE BREAK / POSTER SESSION		
SESSION 8: QAHE (magnetic TIs) & Majorana		
Chaiperson: Charles Gould (University of Würzburg, Germany)		
10:45-11:15	Jelena Klinovaja (University of Basel, Switzerland) Superconducting diode effect due to magnetochiral anisotropy in topological insulator and Rashba nanowires	I7
11:15-11:30	Kajetan Fijalkowski (Würzburg University, Germany) Quantum anomalous Hall edge channels survive up to the Curie temperature	O31
11:30-11:45	Laura Teresa Corredor-Bohorquez (Leibniz Institute for Solid State and Materials Research Dresden - IFW Dresden, Germany) Intermixing-driven ferromagnetism in the quantum anomalous Hall candidate MnBi ₆ Te ₁₀	O32
11:45-12:00	Manaswini Sahoo (IFW, Germany) Role of anti-site intermixing in the magnetic structure of intrinsic magnetic topological insulator: Mn _{1±x} Sb _{2±x} Te ₄	O33
12:00-12:15	Mikhail Otrokov (UPV/EHU, Spain) High Chern number van der Waals magnetic topological multilayers MnBi ₂ Te ₄ /hBN	O34
12:15-12:30	Poliana Heiffig Penteado (University of São Paulo, Brazil) Nonlocality of local Andreev conductances	O35
LUNCH		
Poster Session 4		
SESSION 9: Metrology and Chern insulator devices		
Chaiperson: Jelena Klinovaja (University of Basel, Switzerland)		
14:00-14:30	Charles Gould (University of Würzburg, Germany) Macroscopic Quantum Tunneling of a Topological Ferromagnet	I8
14:30-14:45	Albert Rigosi (National Institute of Standards and Technology, USA) Using Topological Insulators as Quantum Hall Resistance Standards	O36
14:45-15:00	Joseph Dufouleur (IFW Leibniz Institute, Germany) Observation and applications of non-Hermitian topology in a multi-terminal quantum Hall device	O37
15:00-15:15	Dinesh Patel (Physikalisch-Technische Bundesanstalt (PTB), Germany) Quantum Anomalous Hall Effect Devices for Resistance Metrology	O38
15:15-15:30	Valentin Fonck (UCLouvain, Belgium) Towards functional devices based on Chern insulators	O39
COFFEE BREAK / POSTER SESSION		
SESSION 10: Topological materials & new concepts		
Chaiperson: Athanasios Dimoulas (N.C.S.R. Demokritos, Greece)		
16:00-16:30	Nick Kioussis (California State University, USA) Bismuth antiphase domain wall: A three-dimensional manifestation of the Su-Schrieffer-Heeger model	I9
16:30-16:45	Sotirios Fragkos (NCSR Demokritos, Greece) Dirac semimetals in group IV transition metal ditellurides	O40
16:45-17:00	Elli Georgopoulou-Kotsaki (NCSR Demokritos, Greece) Record high T _c ~ 570 K and saturation magnetization enhancement in 2D Fe _{5-δ} GeTe ₂ /Bi ₂ Te ₃ heterostructures grown by MBE	O41
17:00	Concluding remarks	