



International Workshop

**TOP-SPIN 3:**  
**Spin and Topological Phenomena**  
**in Nanostructures**  
**Towards**  
**Topological Materials Science**

Dresden, April 25 – 28, 2017

IFW Dresden  
Helmholtzstraße 20  
01069 Dresden  
Website: [top.spin.ifw-dresden.de](http://top.spin.ifw-dresden.de)



# Workshop program

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## Monday, April 24

### 18:00 - 20:00 Registration/Welcome Reception

IFW Dresden, Helmholtzstr. 20

## Tuesday, April 25

08:45 - 09:00 Welcome

09:00 - 09:40 A. Mackenzie Magnetohydrodynamic effects in mesostructures of ultrapure metals

09:40 - 10:10 L. Schoop Guided Design of New Quantum Materials

10:10 - 10:30 E. Sonin Is spin superfluidity possible in YIG films?

### 10:30 - 11:10 Coffee break

11:10 - 11:40 Y. Maeno Direct penetration of spin-triplet Cooper pairs into a ferromagnet in  $\text{Sr}_2\text{RuO}_4/\text{SrRuO}_3$ -based junctions

11:40 - 12:00 W. Brzezicki Topological gapless phases in non-symmorphic antiferromagnets

12:00 - 12:20 V. Zelezny Strong and non-monotonous temperature dependence of effective mass in  $\text{Bi}_2\text{Te}_3$

### 12:30 - 14:30 Lunch break

14:30 - 15:00 T. Sato Electronic structure of novel topological semimetals and superconductors studied by ARPES

15:00 - 15:20 S. Gueron Ballistic edge states in Bismuth nanowires revealed by SQUID interferometry

15:20 - 15:40 F. Dolcini Photoexcitation of electron wave packets in quantum spin Hall edge states: effects of chiral anomaly from a localised electric pulse

### 15:30 - 16:10 Coffee break

16:10 - 16:40 V. Falko Spin relaxation and quantum transport in graphene and other 2D materials

16:40 - 17:00 G. van Miert A Berry phase approach to bound states and excess charges around defects

17:00 - 17:20 F. Dejene Interfacial spin current control at magnetic YIG/Al interface

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## Wednesday, April 26

09:00 - 09:40	J. Nitta	Topological aspects of spin transport in semiconductor nanostructures
09:40 - 10:10	S. Nomura	Local spin injection and detection for investigations of nanostructures and topological materials
10:10 - 10:30	D. Frustaglia	Spin resonance in topological driving fields
<b>10:30 - 11:10</b>	<b>Coffee break</b>	
11:10 - 11:40	F. Guinea	Novel features due to the spin-orbit coupling in graphene and in topological superconductors
11:40 - 12:00	A. Lau	Topological mirror insulators in one dimension
12:00 - 12:20	Z. Scherubl	Non-local probing of superconducting quantum dots via Yu-Shiba-Rusinov-state in Cooper pair splitter
<b>12:30 - 14:30</b>	<b>Lunch break</b>	
14:30 - 15:00	CNTQC & TMS	Overview of projects activities
15:00 - 15:20	K. Das	Spin transport in curved metallic thin films for 3-dimensional architectures
15:20 - 15:40	Z. Ying	Superconducting Properties of Curved Rashba Spin-Orbit Coupled Nanostructures
<b>15:30 - 16:10</b>	<b>Coffee break</b>	
16:10 - 18:00	Poster Session	

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## Thursday, April 27

09:00 - 09:40	Y. Yanase	Topological superconductivity by unconventional Cooper pairs in locally and globally noncentrosymmetric systems
09:40 - 10:10	C. Li	Observation of $4\pi$ -periodic Supercurrent in $\text{Bi}_{1-x}\text{Sb}_x$ Dirac Semimetal Based Josephson Junctions
10:10 - 10:30	S. Kobayashi	Topological superconductivity in Dirac semimetals
<b>10:30 - 11:10</b>	<b>Coffee break</b>	
11:10 - 11:40	T. Oka	Floquet engineering and control of topology in solid state systems
11:40 - 12:00	D. Schuricht	On the interacting Majorana
12:00 - 12:20	I. C. Fulga	Triple point fermions in a minimal symmorphic model
<b>12:30 - 14:30</b>	<b>Lunch break</b>	
14:30 - 15:00	P. Stano	Resistance of the topological insulator edge mode due to nuclear spins
15:00 - 15:20	J. Dufouleur	Transport properties of spin-helical Dirac fermions in disordered quantum confined systems
15:20 - 15:40	C. Gorini	Magneto-transport in 3D topological insulator nanowires
<b>15:30 - 16:00</b>	<b>coffee</b>	
16:10 - 16:40	D. Sheka	Topological Textures in Curved Magnetic Nanoobjects
16:40 - 17:00	J. Otalora	Nanotubes, a novel layout for magnonic applications
17:00 - 17:20	O. Volkov	Mesoscale Dzyaloshinskii-Moriya interaction in curvilinear geometries: one-dimensional and two-dimensional cases
<b>19:30 - 22:30</b>	<b>Dinner at "Ballhaus Watzke"</b>	
18:45 - 19:00		Bus transfer to the Restaurant "Ballhaus Watzke"
19:30 - 22:30		Social Dinner
22:15 - 22:30		Bus transfer back to the IBIS hotel

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## Friday, April 28

09:00 - 09:40	M. Kläui	Topological Spin Dynamics
09:40 - 10:10	Y. Shiomi	Spin-charge interconversion on topological materials
10:10 - 10:30	M. Stier	Skyrmion-Antiskyrmion pair creation by in-plane currents
<b>10:30 - 11:10</b>	<b>Coffee break</b>	
11:10 - 11:40	O. Yevtuschenko	Helical Modes and the Symmetry Protected Transport in a Kondo Chain
11:40 - 12:00	R. Ohshima	Observation of the spin transport in a d-electron two-dimensional electron gas at the oxide interface
12:00 - 12:20	C.-H. Chang	Strongly anisotropic magnetoresistance due to snake states in open tubular nanostructures
<b>12:30 - 14:30</b>	<b>Lunch break</b>	
14:30 - 15:00	S. Matsuo	Experimental Observation of Andreev Reflection on Junctions of Spin-resolved Quantum Hall Bulk State and Superconductor
15:00 - 15:20	A. Di Bernardo	Superconducting spintronics with high-temperature superconductors
15:20 - 15:40	A. Calle	Fano Andreev effect in T-shape double-quantum-dot in the Kondo regime
<b>15:30 - 16:10</b>	<b>Coffee break</b>	
16:10 - 16:40	J. Wang	Instability of interaction-driven topological insulators against disorder
16:40 - 17:00	J. Krieger	Engineering of topological insulators by magnetic doping
17:00 - 17:20	Closing remarks	

# Notes

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## Local Organizing Committee

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### **Workshop secretary**

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