2019 NSF/DOE/AFOSR Quantum Science Summer School
Pennsylvania State University, June 3 – 14, 2019
All events take place in 262 Willard Bldg. *(Unless otherwise noted)*

Monday, June 3rd

TIME	TOPIC	SPEAKERS
8:40 am – 9:00 am	Welcome	Jun Zhu
9:00 am – 10:30 am	Phase-sensitive measurements on superconducting quantum materials and hybrid superconductor devices	Dale Van Harlingen 1
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Experimental search for Majorana in nanowires	Sergey Frolov 1
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 4:00 pm	Crystal Modeling	Joe Checkelsky
4:00 pm – 4:30 pm	Introductions	Joe Checkelsky
EVENING	**Free time**	

Tuesday, June 4th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	S-TI-S Josephson junction networks: a platform for exploring and exploiting topological states and Majorana fermions	Dale Van Harlingen 2
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Majorana in nanowires	Sergey Frolov 2
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 3:30 pm	Introduction to Topological Photonics	Mikael Rechtsman 1
3:30 pm – 4:45 pm	Poster Talks 1	
5:00 pm – 6:30 pm	Posters 1 (MSC 3rd Floor)	
EVENING	**Free time**	

Wednesday, June 5th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	Applications and Future Directions in Topological Photonics	Mikael Rechtsman 2
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Magnetic imaging techniques	Katja Nowack 1
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 3:30 pm	An introduction to spintronic devices	Nitin Samarth 1
4:00 pm – 5:00 pm	Open Lab Visits	
EVENING	**Free time**	

Thursday, June 6th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	Applications of magnetic imaging	Katja Nowack 2
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Engineering Optical Control: Bespoke Semiconductor Optical Cavities (Building block, solid state optical cavities)	Evelyn Hu 1
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 3:30 pm	Active Learning 1	
3:30-4:00 pm	T-shirt handout/Group Photo (MSC – Garden)	
4:00-5:00	Open Lab Visits	
EVENING	**Free time**	

Friday, June 7th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	“Inverted Atoms” Within SiC Optical Cavities	Evelyn Hu 2
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Topological spintronics	Nitin Samarth 2
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 5:00 pm	Facility tours (MCL, Nanofab, 2D Crystal Consortium)	
5:30 pm – 8:00 pm	School BBQ (Sunset Park)	
EVENING	**Free time**	

Monday, June 10th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	Introduction to models with Majorana fermions/modes and basic properties	Jay Sau 1
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Methods for creating and manipulating 2D heterostructures	Jim Hone 1
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 5:00pm	Facility tours (MCL, Nanofab, 2D Crystal Consortium)	
EVENING	**Free time**	

Tuesday, June 11th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	Proposals for material realizations, applications to quantum information and challenges	Jay Sau 2
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Synthesis and characterization of TMD semiconductors: toward achieving intrinsic properties	Jim Hone 2
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 3:00 pm	Introduction to Topological Quantum Computing	Zhenghan Wang
3:00 pm – 4:15 pm	Poster Talks 2	
4:30 pm – 6:00 pm	Posters 2 (MSC 3rd Floor)	
EVENING	**Free time**	

Wednesday, June 12th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	Monolayer semiconductors: Optical properties, excitons, & the importance of dielectric screening	Scott Crooker 1
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:00 pm	Valleytronic Information Processing and Applications	Steve Vitale
12:00 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 3:00 pm	Recent Progress in Spin Transfer Torque Based Magnetic Random Access Memory	Jonathan Sun
3:00 pm – 4:30 pm	Industry Panel (open end)	
EVENING	**Free time**	

Thursday, June 13th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	Spin/valley dynamics of electrons & holes in monolayer semiconductors	Scott Crooker 2
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	Quantum sensing basics	Ania Jayich 1
12:30 pm – 2:00 pm	**Lunch Break**	
2:00 pm – 3:30 pm	Active Learning 2	
EVENING	**Free time**	

Friday, June 14th

TIME	TOPIC	SPEAKERS
9:00 am – 10:30 am	Challenges and opportunities in quantum sensing	Ania Jayich 2
10:30 am – 11:00 am	**Coffee Break**	
11:00 am – 12:30 pm	School Summary	Jun Zhu
12:30 pm – 2:00 pm	**Lunch Break**	
	SCHOOL ENDS	