The National High Magnetic Field Lab in Tallahassee, Florida, will hold its thirteenth annual Theory Winter School in person from January 6 to 10, 2025.

This year's theme is "Exploring strongly correlated physics across newly accessible length and energy scales". The school will provide an overview of theoretical insights, computational algorithms and experimental platforms that are associated with the realization of novel phases of quantum matter, while also highlighting open questions. The school will initiate close dialogue between various subfields and between theory and experiment.

The list of invited lecturers include:

Speaker	Affiliation
B. Andrei Bernevig	Princeton
Kristjan Haule	Rutgers
Eun-Ah Kim	Cornell
Zhengguang Lu	FSU and National MagLab
Allan MacDonald	University of Texas at Austin
Aavishkar Patel	Flatiron
Nicolas Regnault	CNRS and Princeton
Joerg Schmalian	Karlsruhe Institute of Technology
Jie Shan	Cornell
Sanfeng Wu	Princeton
Di Xiao	University of Washington
Jiabin Yu	University of Florida

ORGANIZERS:

B. Andrei Bernevig	**Princeton**
Hitesh Changlani	**FSU and National MagLab**
Vladimir Dobrosavljevic	**FSU and National MagLab**

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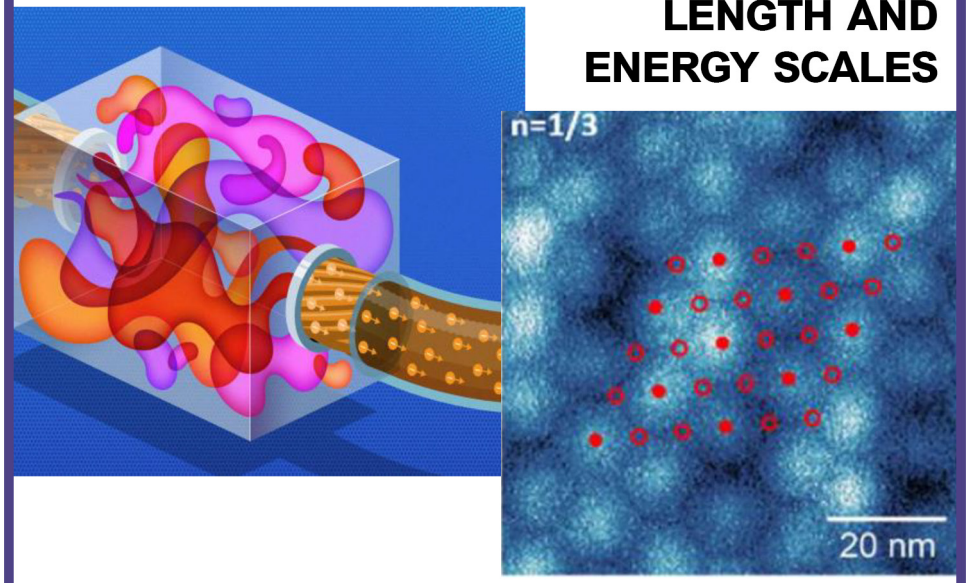
Code of Conduct for the Theory Winter School:

All participants, attendees, vendors, staff, volunteers, and all other stakeholders are required to conduct themselves in a professional manner that is welcoming to all participants and free from any form of discrimination, harassment, or retaliation. Participants will treat each other with respect and consideration to create a collegial, inclusive, and professional environment. At any time during the Theory Winter School, if any concerns or issues arise, please reach out to any of the organizers.

THEORY WINTER SCHOOL

January 6 - 10, 2025

EXPLORING STRONGLY CORRELATED PHYSICS ACROSS NEWLY ACCESSIBLE LENGTH AND ENERGY SCALES



Sponsors:

NATIONAL HIGH MAGNETIC FIELD LABORATORY

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Agenda for 2025 - Theory Winter School

January 6-10, 2025

Tallahassee, Florida

MONDAY, JANUARY 6TH, 2025

6:30am - 8:00am	**BREAKFAST AT TRU BY HILTON TALLAHASSEE CENTRAL**
8:00am	**SHUTTLE FROM HOTEL TO THE LAB**
8:30am	**ONSITE REGISTRATION**
8:45am - 9:00am	**Dr. Kathleen Amm, NHMFL Director: Welcome address**
9:00am - 10:00am	**Allan MacDonald (University of Texas at Austin)**
	Introduction to physics of strong correlations in moiré superlattice systems – I
10:00am - 10:30am	**COFFEE BREAK**
10:30am - 11:30am	**Di Xiao (University of Washington)**
	Fractional Quantum Anomalous Hall Effect In Twisted Bilayer Transition Metal Dichalcogenides - I
11:30am - 12:30pm	**Jie Shan (Cornell)**
	Fractional Chern insulators and Wigner crystals in moiré systems
12:30pm - 2:00pm	**LUNCH**
2:00pm - 3:00pm	**Nicolas Regnault (CNRS and Princeton)**
	Fractional phases of matter: from toy models to moiré - I
3:00pm - 3:30pm	**COFFEE BREAK**
3:30pm - 4:30pm	**Jiabin Yu (University of Florida)**
	Quantum Geometry in Quantum Materials: Topological Bound and Correlations
4:30pm - 6:00pm	**Q & A session**
6:00pm - 7:00pm	**DINNER**
7:00pm	**SHUTTLE FROM LAB TO HOTEL**

TUESDAY, JANUARY 7TH, 2025

6:30am - 8:00am	**BREAKFAST AT TRU BY HILTON TALLAHASSEE CENTRAL**
8:00am	**SHUTTLE TO THE LAB**
8:30am - 9:30am	**Allan MacDonald (University of Texas at Austin)**
	Introduction to physics of strong correlations in moiré superlattice systems – II
9:30am - 10:00am	**COFFEE BREAK**
10:00am - 11:00am	**Di Xiao (University of Washington)**
	Fractional Quantum Anomalous Hall Effect In Twisted Bilayer Transition Metal Dichalcogenides - II
11:00am - 12:00pm	**Nicolas Regnault (CNRS and Princeton)**
	Fractional phases of matter: from toy models to moiré - II
12:00pm - 1:30pm	**LUNCH**
1:30pm - 2:30pm	**B. Andrei Bernevig (Princeton)**
	Overview of strongly correlated physics across new length and energy scales
2:30pm - 3:30pm	**Tutorial (Nicolas Regnault and Jiabin Yu)**
	FCI hackathon
3:30pm - 4:00pm	**COFFEE BREAK**
4:00pm - 5:30pm	**Tutorial (continued)**
	FCI hackathon
5:30pm - 6:30pm	**Poster Session I**
6:30pm - 7:30pm	**DINNER**
7:30pm	**SHUTTLE FROM LAB TO HOTEL**

WEDNESDAY, JANUARY 8TH, 2025

6:30am - 8:00am	**BREAKFAST AT TRU BY HILTON TALLAHASSEE CENTRAL**
8:00am	**SHUTTLE TO THE LAB**
8:30am - 9:30am	**Zhengguang Lu (FSU and National Maglab)**
	Fractional Quantum Anomalous Hall Effects in Multilayer Graphene
9:30am - 10:00am	**COFFEE BREAK**
10:00am - 11:00am	**Joerg Schmalian (Karlsruhe Institute of Technology)**
	Strongly correlated physics across length and energy scales – old and new - I
11:00am - 12:00pm	**Eun-Ah Kim (Cornell)**
	Artificial Intelligence for quantum matter - I
12:00pm - 12:30pm	**LUNCH**
12:30pm	Excursion (Wakulla springs)
	DINNER ON OWN

THURSDAY, JANUARY 9TH, 2025

6:30am - 8:00am	**BREAKFAST AT TRU BY HILTON TALLAHASSEE CENTRAL**
8:00am	**SHUTTLE TO THE LAB**
8:30am - 9:30am	**Joerg Schmalian (Karlsruhe Institute of Technology)**
	Strongly correlated physics across length and energy scales – old and new - II
9:30am - 10:00am	**COFFEE BREAK**
10:00am - 11:00am	**Eun-Ah Kim (Cornell)**
	Artificial Intelligence for quantum matter - II
11:00am - 12:00pm	**Aavishkar Patel (Flatiron)**
	Quantum Matter with Disordered Interactions and Strange Metals
12:00pm - 1:30pm	**LUNCH**
1:30pm - 2:30pm	**Kristjan Haule (Rutgers)**
	Applications of dynamical mean field theory for strongly correlated electrons - I
2:30pm - 3:30pm	**Tutorial (Aavishkar Patel and Kristjan Haule)**
	Numerical solution of models of strong disorder and interactions
3:30pm - 4:00pm	**COFFEE BREAK**
4:00pm - 5:30pm	**Tutorial (continued)**
	Numerical solution of models of strong disorder and interactions
5:30pm - 6:30pm	**Poster Session II**
6:30pm - 7:30pm	**DINNER**
7:30pm	**SHUTTLE FROM LAB TO HOTEL**

FRIDAY, JANUARY 10TH, 2025

6:30am - 8:00am	**BREAKFAST AT TRU BY HILTON TALLAHASSEE CENTRAL**
8:00am	**SHUTTLE TO THE LAB**
8:30am - 9:30am	**Sanfeng Wu (Princeton)**
	Encapsulated Chemistry and Quantum Engineering of Superconductivity in moiré Topological Materials
9:30am - 10:00am	**COFFEE BREAK**
10:00am - 11:00am	**Kristjan Haule (Rutgers)**
	Applications of dynamical mean field theory for strongly correlated electrons - II
11:00am - 12:00pm	**Q & A session, CLOSING REMARKS**
12:00pm - 1:30pm	**LUNCH**
1:30pm	**GOODBYE**