Workshop on Flat Bands, Strong Correlations and Topology
November 6-8, 2023

Invited talk: 20 + 10 minutes
Short talk: 12 + 3 minutes
Poster requirements: No larger than 4'x4' or 120cmx120cm

Sunday, November 5

Arrival		
6:00--8:00pm	*Welcome Reception for Speakers and RCQM PIs*	
Workshop Scientific Program Venue: *Bioscience Research Collaborative building, Rice University Campus*		

Monday, November 6

Coffee, light breakfast and registration (8:15am-8:40am)		
8:40-8:45	Organizers -Welcome and opening remarks	
Session I	**Moiré systems**	
8:45-9:15	Xiaodong Xu (UW Seattle)	"Observation of fractional quantum anomalous Hall effect"
9:15-9:45	Liuyan Zhao (U. Michigan)	"Moiré magnetism in twisted two-dimensional magnets"
9:45-10:15	Elaine Li (U. Texas Austin)	"Tunable moiré potential from a twisted hBN substrate"
10:15-10:45	*Coffee break*	
10:45-11:15	Raquel Queiroz (Columbia U.)	"Stability of chiral Landau levels and its implications for twisted heterostructures"
10:15-11:30	Short talk: Nicolás Morales-Duran (UT Austin)	"The Landau level approach to twisted homobilayer transition metal dichalcogenides"
11:30-12:00	Feng Wang (UC Berkeley)	"Designing artificial quantum materials in transition metal dichalcogenide moiré heterostructures"
12:00-12:15	Blitz poster preview I (*1 minute per poster*)	
12:15-2:00	***Lunch and Poster Session I***	
Session II	**Flat bands, correlated superconductors and topology**	
2:00-2:30	Andrea Damascelli (UBC, Canada)	"From adatom-induced superconductivity to strain-induced Landau levels in graphene"
2:30-3:00	Yi Li (Johns Hopkins U.)	"Hund's coupling-assisted ferromagnetic percolation transition in a multiorbital flat band"
3:00-3:30	Julia Chan (Baylor U.)	"Crystal growth of rare earth intermetallics: A platform for quantum materials"
3:30-4:00	*Coffee break*	
4:00-4:30	Liang Fu (MIT)	"Fundamental bound on topological gap"
4:30-4:45	Short talk: Peizhi Mai (U. Illinois)	"1/4 is the new ½: when topology is intertwined with Mottness"
4:45-5:15	Päivi Törmä (Aalto U., Finland)	"Flat band superconductivity: quantum geometric supercurrent and quenching of non-equilibrium quasiparticle transport"

5:15-5:45	Daniel McNally (Nature Materials)	"Inside Nature Materials: An editor's perspective"
7:00	Dinner for Speakers and RCQM PIs	
Tuesday, November 7		
Coffee, light breakfast and registration (8:15am-8:45am)		
Session III	**Flat bands and strong quantum fluctuations**	
8:45-9:15	Late development: Guang-han Cao (Zhejiang U., China)	"Superconductivity and CDW/SDW orders in a correlated kagome metal"
9:15-9:45	Late development: Kin Fai Mak (Cornell U.)	"Magnetism in doped moiré Mott insulators"
9:45-10:15	Lei Chen (Rice U.)	"Quantum criticality and emergent topology in flat band systems"
10:15-10:45	*Group Photo and Coffee break*	
10:45-11:15	Joe Checkelsky (MIT)	"Flat band effects in model lattice crystals"
11:15-11:45	Jianwei Huang (Rice U.)	"Exploring flat bands, electron correlations and topology in pyrochlore lattice compounds"
11:45-12:00	Short talk: Joern Bannies (UBC, Canada)	"Electronically driven switching of topology in LaSbTe"
12:00-12:15	Blitz poster preview II (*1 minute per poster*)	
12:15-2:00	***Lunch and Poster Session II***	
Session IV	**Flat bands and exotic electronic orders**	
2:00-2:30	Zurab Guguchia (PSI, Switzerland)	"Unconventional superconductivity and charge order in kagome-lattice systems as seen by muon-spin rotation"
2:30-3:00	Mason Klemm (Rice U.)	"Electronic, structural, and magnetic modification of kagome metal FeGe via post-growth annealing"
3:00-3:30	Jiun-Haw Chu (UW Seattle)	"Absence of nematic instability in the kagome metal CsV3Sb5".
3:30-4:00	*Coffee break*	
4:00-4:30	Chunhui Du (UCSD/Georgia Tech)	"Revealing intrinsic domains and fluctuations of moiré magnetism by a wide-field quantum microscope"
4:30-4:45	Short talk: Qiangqiang Gu (Cornell U.)	"Pair wavefunction symmetry in UTe2 from zero-energy surface state visualization"
4:45-5:15	Liang Wu (U Penn)	"Time-resolved scanning optical microscopy on Kagome metals"
5:15-5:45	Rob McQueeney (Iowa State U.)	"Competing magnetic interactions and novel excitations in RMn6Sn6 kagome metal"
Wednesday, November 8		
Coffee, light breakfast and registration (8:15am-8:45am)		
Session V	**Flat bands, correlations and topology I**	
8:45-9:15	Katja Nowack (Cornell U.)	"Understanding electronic transport through local magnetic measurements"
9:15-9:45	Yulin Chen (Oxford U., UK)	"Strong inter-valley electron-phonon coupling in magic-angle twisted bilayer graphene"

9:45-10:15	Elton Santos (U. Edinburgh, UK)	"Exploring the limits of magnetism in two-dimensional materials"
10:15-10:45	*Coffee break*	
10:45-11:15	Maia Vergniory (MPI Dresden, Germany/Donostia IPC, Spain)	"Single particle Green's function for correlated topological materials"
11:15-11:45	Jed Pixley (Rutgers U.)	"Novel strongly correlated phases in stacked TMD bilayers"
11:45-12:15	Kai Sun (U. Michigan)	"Topological exact flat bands beyond K-valley two-dimensional materials"
12:15-1:30	***Lunch***	
Session VI	**Flat bands, correlations and topology II**	
1:30-2:00	Silke Paschen (TU Vienna, Austria)	"Correlation-driven topological semimetals"
2:00-2:30	Haim Beidenkopf (Weizmann I. Sci., Israel)	"Interactions and topology in the hybrid transition metal dichalcogenide 4Hb-TaS2"
2:30-3:00	Emilia Morosan (Rice U.)	"Kramers nodal lines in quantum materials"
3:00-3:30	*Coffee break*	
3:30-4:00	Biao Lian (Princeton U.)	"Kagome and honeycomb flat bands in moiré graphene systems"
4:00-4:30	Girsh Blumberg (Rutgers U.)	"The low-temperature ordered states in kagome materials from the optics perspective"
4:30-5:00	Binghai Yan (Weizmann I. Sci., Israel)	"Novel transport phenomena in topological materials"