QMAT Scientific Advisory Board meeting 2026

Programme • Gustavelund Conference Centre, Tuusula, Finland

Tuesday 3 November

QMAT and its research groups — Tuusulajärvi auditorium

09:00	*Registration and coffee*	
10:00	**Tero Heikkilä** University of Jyväskylä, QMAT director	*Introduction to QMAT*
10:30	**Jose Lado** Aalto University, QMAT vice director	*Overview of the work packages*
11:00	**QMAT research groups**	*Pertti Hakonen, Zhipei Sun, Shawulienu Kezilebieke, Alberto Ronzani*
11:20	*Short break*	
11:30	**QMAT research groups**	*Peter Liljeroth, Päivi Törmä, Teemu Ojanen, Jose Lado, Tero Heikkilä*
11:55	Discussion	
12:00	**Anniina Runtuvuori-Salmela** QMAT coordinator	*Organisation of the Centre*
	Jari Mäkinen	*Communications, followed by discussion*
12:35	*Lunch*	

Afternoon

14:00	**Contributed talks** Three parallel sessions	*WP1, WP2 and WP3 sessions, see the next page. In parallel, separate discussions of the SAB members and of the observers.*
15:30	*Coffee break*	
15:45	**Jie Shan** SAB member	*Moiré materials: a new platform for correlations and topology*
16:10	**Felix von Oppen** SAB member	*How quantum is quantum geometry*
16:35	**José Ignacio Pascual** SAB member	*A charge-tunable Cooper-pair diode*
17:15	Poster session, Tuusulajärvi auditorium (list of posters on the last page)	
19:00	*Dinner*	
21:00	Sauna, with refreshments and snacks	

Tuesday 3 November | Parallel sessions

14:00–15:30, 12+3 min per talk.

WP1 | Design of artificial hybrid quantum matter

14:00	**Atif Ghafoor** University of Jyväskylä	*Spatially localized moiré excitons in van der Waals heterostructures*
14:15	**Aaron Dunbrack** University of Jyväskylä	*Twisted bilayer density waves*
14:30	**Alessandro Orsini** Aalto University	*Interplay of charge density wave and Ising superconductivity in $NbSe_2$*
14:45	**Cuiju Yu** Aalto University	*Intrinsic i-wave altermagnetism in 2D graphene superlattices*
15:00	**Antti Karjasilta** Aalto University	*Probing type-II multiferroicity in monolayer $NiBr_2$*
15:15	**Busra Gamze Arslan** Aalto University	*Engineering 2D magnetism with van der Waals heterostructures*

WP2 | Quantum characterisation of correlated materials

14:00	**Anushree Datta** Aalto University	*Moiré superconductivity and quantum geometry*
14:15	**Stanislav Khaldeev** Aalto University	*Experiments on twisted bilayer graphene*
14:30	**Pauli Virtanen** University of Jyväskylä	*Collective modes in flat-band superconductors*
14:45	**Anouar Moustaj** Aalto University	*Tensor-network methodology for real-space super-moiré excitons*
15:00	**Eli Gerber** Aalto University	*Discovery of noncentrosymmetric topological materials beyond symmetry indicators*
15:15	**Paolo Molignini** University of Jyväskylä	

WP3 | Quantum-materials-based enabling technologies

14:00	**Ruihuan Fang** Aalto University	*Controllable superconductivity in suspended $NbSe_2$*
14:15	**Tosson Elalaily** Aalto University	*Poissonian phase slip shot noise in Al/InAs nanowires*
14:30	**Aki Ruhtinas** Aalto University	*Ion beam fabrication of silicide junctions and SQUIDs*
14:45	**Jingnan Yang** Aalto University	
15:00	**Richa Mitra** VTT	*Graphene-Based Two-Dimensional Josephson Field-Effect Transistors for Low-Power Superconducting Integrated Circuits*
15:15	**Karl-Magnus Persson** VTT	*VTT's 200 mm pilot line for ferroelectric devices*

Wednesday 4 November

All talks in the Tuusulajärvi auditorium, 20+5 min per talk.

Superconductivity and hybrid structures

08:30	**Sebastian Bergeret** CFM San Sebastián and Univ. of Jyväskylä	*A unified framework for electronic transport in disordered hybrid nanostructures*
08:55	**Stefan Ilic** University of Jyväskylä	*Probing quantum materials through supercurrent non-reciprocity*
09:20	**Krystof Kolar** Aalto University	*Superfluid weight in the cuprates*
09:45	**Mikael Fogelström** Nordita	
10:10	*Break*	

Correlated and topological 2D materials

10:30	**Somesh Chandra Ganguli** University of Jyväskylä	*Evidence of unconventional superconductivity in monolayer transition metal dichalcogenides*
10:55	**Adolfo Fumega** Aalto University	*Emergence of moiré-correlated phases in twisted Mott bilayers*
11:20	**Ali Moghaddam** Tampere University	*Surface states in magnetic topological insulators: magnetic ordering and interaction effects*
11:45	*Lunch*	

Ferroics, mesoscopic transport and spin liquids

13:00	**Nianze Shang** Aalto University	*Collective sliding relaxor ferroelectricity across thousand-layer van der Waals superstructures*
13:25	**Oscar Kaatranen** VTT	*Ferroelectric HfO_2/ZrO_2: from polarization switching to memory functionality*
13:50	**Manohar Kumar** Aalto University	*Non-equilibrium phenomena in mesoscopic conductors*
14:15	**Ziying Wang** Aalto University	*Moiré-modulated quantum spin liquid in 1T-$TaSe_2$*
14:40	*Coffee break*	

Focus sessions and closing

Tuusulajärvi auditorium

15:00	**AI agents in science**	*Yue Fang, Tosson Elalaily, Pauli Virtanen, Anouar Moustaj*
16:00	**Outreach**	*New ways of popularizing science*
	SAB preparation (30 min), followed by feedback from the SAB to the PIs (30 min)	
17:00	*End of the meeting*	

Posters

Tuesday 3 November, 17:15–19:00 — Tuusulajärvi auditorium

No.	Presenter	Research group
Aalto University		
P1	Luigi Camerano	Lado
P2	Yuvraj Chaudhry	Hakonen
P3	Yue Fang	Sun
P4	Juan Galván Paz	Hakonen
P5	Ilya Golokolenov	Hakonen
P6	Curie Lee	Lado
P7	Vishnu Varma Mantena	Hakonen
P8	Svitlana Menshykova	Hakonen
P9	Shubhadip Moulick	Hakonen
P10	Amber Mozes	Hakonen
P11	Karoliina Oksanen	Lado
P12	Animesh Puzari	Liljeroth
P13	Henrik Stenbrink	Lado
P14	Shakthidhar Vilvanathan	Hakonen
University of Jyväskylä		
P15	Zuned Ahmed	Kezilebieke
P16	Ulysse Chazarin	Kezilebieke
P17	Dan Crawford	Heikkilä
P18	Maryam Darvishi	Heikkilä
P19	Ratheejit Ghosh	Molignini
P20	Haojie Guo	Kezilebieke
P21	Liwei Jing	Kezilebieke
P22	Tim Kokkeler	Heikkilä
P23	Natale Matranga	Heikkilä
P24	Risto Ojajärvi	Heikkilä
P25	Yerkin Shabdan	
P26	Ewa Swierkosz	Heikkilä
P27	Devesh Vaish	Heikkilä
Tampere University		
P28	Korala Harsha Gunawardana	Ojanen
P29	Yousef Mafi	Ojanen
P30	Mahla Moridi Farimani	Ojanen
VTT Technical Research Centre of Finland		
P31	Adrian Gutierrez Cruz	Ronzani
P32	Achini Rathnathilaka	Ronzani
P33	Tuomas Vaimala	Ronzani