

# **From Fundamentals to the Future: Advancing Functionalities of Two- Dimensional Quantum Materials**

**Taiwanese-German WE-Heraeus-Seminar**

**14 - 18 July 2024**

**at the**

**Evangelische Akademie, Tutzing, Germany**

**WILHELM UND ELSE  
HERAEUS-STIFTUNG**



# Program

## Sunday, 14 July 2024

16:00 – 20:00 Registration

From 18:00 *DINNER*

19:45 – 20:45 Lain-Jong (Lance) Li

**Two-dimensional semiconductors for advanced electronics**

From 21:00

**UEFA EURO 2024, Final (Musiksaal)**

## Monday, 15 July 2024

08:00 – 08:45 *BREAKFAST*

09:30 – 09:45 Scientific organizers

**Opening and Welcome**

09:45 – 10:00 Stefan Jorda

**About the Wilhelm and Else Heraeus Foundation**

10:00 – 11:00 Klaus Ensslin

**Quantum devices in twisted graphene layers**

11:00 – 11:30 *COFFEE BREAK*

11:30 – 12:10 Mario Hofmann

**Emergent optoelectronic properties of graphene-based junctions**

12:10 – 12:30 Lina Bockhorn

**Topological phenomena of folded graphene in magnetotransport properties**

12:30 – 14:00 *LUNCH*

14:00 – 14:40 Christian Volk

**Radio-frequency charge detection on gate-defined bilayer graphene quantum dots**

14:40 – 15:20 Annika Kurzmann

**Electrostatically defined graphene quantum dots**

15:20 – 16:00 *COFFEE BREAK*

# Program

**Monday, 15 July 2024**

16:00 – 16:40	Joel I-Jan Wang	Hybrid superconducting quantum circuits with van der Waals heterostructures
16:40 – 17:20	Ming-Wen Chu	Probing the plasmon dispersions in three- and two-dimensional quantum matters by momentum-dependent electron energy loss spectroscopy
17:20 – 18:00	Carolin Gold	Engineering and imaging microscopic properties in graphene heterostructures
18:00 – 20:00	DINNER	
20:00 – 20:40	Christian Koitzsch	Project introduction ESMC (online talk)
21:00 – 22:00		POSTER SESSION I (Musiksaal)

# Program

**Tuesday, 16 July 2024**

08:00 – 08:45	<i>BREAKFAST</i>	
09:00 – 10:00	Tay-Rong Chang	<b>Electronic structure of topological materials</b>
10:00 – 11:00	Dmitri Efetov	<b>Thermodynamic measurements of correlated states in magic angle twisted bilayer graphene</b>
11:00 – 11:30	<i>COFFEE BREAK</i>	
11:30 – 12:10	Denis Kochan	<b>Magnetoelectric phenomena of non-centrosymmetric superconductors</b>
12:10 – 12:30	Aitor Garcia-Ruiz	<b>Moire materials under magnetic fields: a world of butterflies</b>
12:30 – 14:00	<i>LUNCH</i>	
14:00 – 14:40	Ruoming Peng	<b>Scanning quantum microscopy for emergent phases of matter</b>
14:40 – 15:20	Klaus Zollner	<b>Proximity-induced phenomena in twisted van der Waals heterostructures</b>
15:20 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 16:40	Cosimo Gorini	<b>3D topological insulator nanowires: quantum magneto-transport in (negatively) curved space</b>
16:40 – 17:20	Ya-Ping Chiu	<b>Atomic-scale moiré topology in twisted transition metal dichalcogenide bilayers</b>
17:20 – 18:00	Markus Huber	<b>Ultrafast nanoscopy of charge carrier dynamics in quantum materials</b>
18:00 – 20:00	<i>DINNER</i>	
20:00 – 21:00		<b>POSTER SESSION II (Musiksaal)</b>

# Program

Wednesday, 17 July 2024

08:00 – 08:45	<i>BREAKFAST</i>	
09:00 – 10:00	Roser Valenti	<b>Modelling correlated electrons in two-dimensional van der Waals platforms</b>
10:00 – 11:00	Ying-Jer Kao	<b>Chern dartboard insulator: sub-Brillouin zone topology and skyrmion multipoles</b>
11:00 – 11:30	<i>COFFEE BREAK</i>	
11:30 – 12:10	Laura Classen	<b>Field control of many-body phases in frustrated moiré bilayers</b>
12:10 – 12:30	Hsinzon Tsai	<b>Visualizing dynamic molecular manipulation on a graphene field effect transistor</b>
12:30 – 14:00	<i>LUNCH</i>	
14:00 – 14:40	Chung-Hou Chung	<b>Revealing the mystery of strange metal states in correlated electron systems</b>
14:40 – 15:20	Tim Wehling	<b>Electron correlations in graphene multi-layers</b>
15:20 – 16:00	<i>COFFEE BREAK</i>	
16:00	EXCURSION	<b>BUS LEAVING 16:00 ANDECHS VIA HERRSCHING</b>
18:30 – 20:45	<i>DINNER ANDECHS</i>	
21:00	BUS RETURN	

# Program

**THURSDAY, 18 July 2024**

08:00 – 08:45	<i>BREAKFAST</i>	
09:00 – 10:00	Yann-Wen Lan	<b>Twisted light interacted with materials for boosting low dimensional transistors</b>
10:00 – 11:00	Alexey Chernikov	<b>Excitons in 2D monolayer and heterobilayer semiconductors</b>
11:00 – 11:30	<i>COFFEE BREAK</i>	
11:30 – 12:10	Ting-Hua Lu	<b>Angular momentum of light for applications in two-dimensional quantum materials</b>
12:10 – 12:30	Cheng-Maw Cheng	<b>Topological phase transition in Sn single layer from stanene to Beta-Sn</b>
12:30 – 14:00	<i>LUNCH</i>	
14:00 – 14:40	Chaw-Keong Yong	<b>Optically tunable many-body exciton-phonon quantum interference</b>
14:40 – 15:20	Nadine Leisgang	<b>Interlayer excitons in gated two-dimensional semiconductors</b>
15:20 – 16:00	<i>COFFEE BREAK/ FAREWELL</i>	

***End of the seminar and departure – BUS TO REGENSBURG LEAVING 16:00***