Correlations and Topology in Quantum Materials

Spanish-German WE-Heraeus-Seminar

21 – 24 January 2024

at the Physikzentrum Bad Honnef/Germany

WILHELM UND ELSE
HERAEUS-STIFTUNG

Program *(CET)*

Sunday, 21 January 2024

17:00 – 21:00	ARRIVAL and REGISTRATION	
18:30	*BUFFET SUPPER*	

Monday, 22 January 2024

08:00	*BREAKFAST*	
08:50 – 09:00	Organizers	**Welcome**
Session chair: Roser Valentí		
09:00 – 09:45	Maia Vergniory	**Topological Quantum Chemistry and Single Particle Greens' Function for Correlated Topological Materials**
09:45 – 10:15	Jörg Schmalian	**Topologically Enabled Superconductivity**
10:15 – 11:00	*COFFEE BREAK*	
11:00 – 11:30	Claudia Felser	**Magnetic Topological Materials with Electronic Instabilities**
11:30 – 12:00	Victor Pardo	**Interplay Between Charge density Waves, Magnetism and Super-conductivity in Transition Metal Dichalcogenides**
12:00 – 12:30	Anna Boehmer	**Tuning Quantum Materials**
12:30 – 12:45	**Conference Photo (outside at the main entrance)**	
12:45 – 14:00	*LUNCH BREAK*	

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Session chair: Leni Bascones

14:00 – 14:30	Kristin Willa	**Interplay of Stripe and Double-Q Magnetism with Superconductivity in $Ba_{1-x}K_xFe_2As_2$ Under the Influence of Magnetic Fields**
14:30 – 15:00	Jochen Wosnitza	**Unconventional High-Field Phases in Organic Superconductors**
15:00 – 15:30	Maria Navarro Gastiasoro	**Superconductivity in $KTaO_3$ Interfaces**
15:30 – 16:00	*COFFEE BREAK*	
16:00 – 16:30	Gertrud Zwicknagl	**Heavy Fermion Systems: Recent Surprises and New Frontiers**
16:30 – 17:00	Miguel M. Ugeda	**Collective Electronic States in a Two-dimensional Heavy-fermion System**
17:00 – 17:30	Gabriel Sánchez Santolino	**Polar Vortex Patterns in Twisted Freestanding Oxides**
17:30 – 17:45	Stefan Jorda	**About the Wilhelm and Else Heraeus Foundation**
17:45 – 18:30	**Poster Flash I**	
18:30 – 19:30	*DINNER*	
19:30 – 20:30	**Poster Session I**	
20:30	**Social Event: Ham Tasting** *(Lichtenberg Cellar)*	

Program *(CET)*

Tuesday, 23 January 2024

08:00	*BREAKFAST*	
Session chair: Hermann Suderow		
09:00 – 09:45	Angel Rubio	**Cavity Materials Engineering: Novel Non-equilibrium Phenomena in Two Dimensional Heterostructures**
09:45 – 10:15	María José Calderon	**The Unconventional Normal State of Twisted Bilayer Graphene**
10:15 – 11:00	*COFFEE BREAK*	
11:00 – 11:30	Tim O. Wehling	**Electron Correlations in Moiré Superlattices**
11:30 – 12:00	Tobias Stauber	**Phase Diagram of Magic Angle Bilayer Graphene**
12:00 – 12:30	Laura Classen	**Field Control of Many-body Phases in Frustrated Moiré Bilayers**
12:30 – 14:00	*LUNCH BREAK*	
Session chair: Jörg Schmalian		
14:00 – 14:30	Katharina Franke	**Yu-Shiba-Rusinov States in Artificially Constructed Adatom Structures: Quantum Spins, Band Formation and Chirality**
14:30 – 15:00	Dieter Koelle	**NanoSQUIDs for Sensing Magnetic Fields on the Nanoscale**
15:00 – 15:30	José María De Teresa	**Superconducting Devices Based on Bi_2Se_3 Junctions**
15:30 – 16:15	*COFFEE BREAK*	
16:15 – 17:00	**Poster Flash II**	
17:00 – 18:30	**Round Table: Promoting Collaborations**	
18:30 – 20:00	*HERAEUS DINNER at the Physikzentrum (with complimentary drinks)*	
20:00 – 21:00	**Poster Session II**	

Program *(CET)*

Wednesday, 24 January 2024

08:00	*BREAKFAST*	
Session chair: Anna Böhmer		
09:00 – 09:45	Eugenio Coronado	**2D Magnetic Heterostructures: From Artificial Magnets to Smart Molecular/2D Heterostructures**
09:45 – 10:15	Jairo Sinova	**The Emergent Research Landscape of Altermagnetism: Unconventional Magnetism and its New Connections**
10:15 – 11:00	*COFFEE BREAK*	
11:00 – 11:30	José J. Baldovi	**Magnon Straintronics and Chemical Tuning in 2D Magnetic Materials**
11:30 – 12:00	Sebastian Bergeret	**Nonreciprocal Superconducting Transport and the Spin Hall Effect in Gyrotropic Structures**
12:00 – 12:30	Johannes Hofmann	**Nonlinear Topological Thermoelectric Currents as Probes of Interaction Effects in Fermi Liquids**
12:30 – 12:40	**Poster Prizes and Concluding Remarks**	
12:40	*LUNCH*	

End of Seminar / Departure