

2D Materials and Hybrids: Hybrid Quasiparticles in Quantum Materials

771. WE-Heraeus-Seminar

24 Sep - 28 Sep 2022

Physikzentrum

Bad Honnef/Germany

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



Program

Saturday, 24 September 2022

17:00 – 20:00	Registration	
18:30 – 19:30	<i>BUFFET SUPPER</i>	
19:30 – 19:40	Scientific organizers	Welcome note
19:40 – 20:25	Asger Mortensen	Exploring nonlocal electrodynamics: Interfacing metals and 2D materials

Sunday, 25 September 2022

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Kai Rossnagel	Quasi-electron imaging of quasi-2D materials
09:45 – 10:30	Christoph Kastl	Spin-orbit control in graphene-based van der Waals interfaces
10:30 – 10:50	Iris Niehues	Nanoscale mapping of carrier density in intercalated 2D semiconductors by IR and THz nanoscopy
10:50 – 11:10	<i>COFFEE BREAK</i>	
11:10 – 11:55	Jana Zaumseil	Tuning carbon nanotubes emission with quantum defects and cavity-hybridization
11:55 – 12:40	Christoph Lienau	Communication on the Nanoscale: Strong coupling and Multidimensional Spectroscopy
12:40	<i>LUNCH</i>	

Program

Sunday, 25 September 2022

14:00 – 14:45	Antonietta de Sio	Ultrafast nonadiabatic dynamics in optoelectronic materials revealed by two-dimensional electronic spectroscopy
14:45 – 15:30	Nahid Talebi Sarvari	Interaction of Electron Beams with 2D Materials and Hybrids
15:30 – 15:50	Jonas Bauer	Probing excitonic population dynamics by nonlinear optical wave mixing in monolayer WSe ₂
15:50 – 16:20	<i>COFFEE BREAK</i>	
16:20 – 17:05	Fabio Caruso	Phonons out of equilibrium: from ab-initio theory to pump-probe experiments
17:05 – 17:50	Michael Bauer	Non-equilibrium carrier dynamics and carrier-phonon interaction in 2D quantum materials
17:50 – 18:10	Deividas Sabonis	Nonlocal signatures of hybridization between quantum dot and Andreev bound states
18:30	<i>DINNER</i>	
20:00	Networking / Panel discussion	

Program

Monday, 26 September 2022

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Giancarlo Soavi	Nonlinear optics with 2D materials
09:45 – 10:30	Thomas Heine	Topological 2D polymer/graphene heterostructures
10:30 – 10:50	Zeinab Ebrahimpour	THz nonlinear optical conductivity in bulk black phosphorus
10:50 – 11:10	<i>COFFEE BREAK</i>	
11:10 – 11:55	Rainer Hillenbrand	Strong coupling between molecular vibrations and phonon polaritons in van der Waals materials
11:55 – 12:40	Javier García de Abajo	Quantum optical phenomena in 2D material heterostructures
12:40	<i>LUNCH</i>	
14:00 – 14:45	Poster Flash Presentations	
14:45 – 14:55	Conference photo	
14:55 – 15:50	Postersession (with coffee)	
16:00 – 18:30	Excursion (hike / walk)	
18:45 – 19:00	Poster Awards	
19:00	<i>HERAEUS DINNER at the Physikzentrum (cold & warm buffet, with complimentary drinks)</i>	

Program

Tuesday, 27 September 2022

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Doris Reiter	Theory of spatiotemporal carrier dynamics in 2D semiconductors
09:45 – 10:30	Luiz Tizei	Fast electron spectroscopies to probe optical excitations in 2D materials
10:30 – 10:50	Shubhadeep Biswas	Strong light-field controlled valleytronics
10:50 – 11:10	<i>COFFEE BREAK</i>	
11:10 – 11:55	Harald Giessen	Topological plasmonics: Ultrafast vector movies of plasmonic skyrmions on the nanoscale
11:55 – 12:40	Anika Schlenhoff	Using image-potential states as a quantum probe of atomic-scale spin textures
12:40	<i>LUNCH</i>	
14:00 – 14:45	Joshua Robinson (online)	Semiconductors and Metals at the Atomic Limit
14:45 – 15:30	Alexander Steinhoff (online)	Theory of exciton dynamics in atomically thin semiconductors
15:30 – 15:50	Nihit Saigal	Collective Excitations and Degenerate Phases in TMDC Bilayers
15:50	<i>COFFEE BREAK</i>	

Program

Tuesday, 27 September 2022

16:20 – 17:05	Alexander Weber-Bargioni	Engineering heterostructures in 2-D solids to define new localized quantum states with quantum coherent properties
17:05 – 17:50	Paolo Sessi	2D ferroics explored via scanning tunneling microscopy and spectroscopy
17:50 – 18:10	Julian Klein	Magnetically correlated defects in a quasi-1D electronic van der Waals magnetic semiconductor
18:30	<i>DINNER</i>	
20:00 – 20:30	Posterprize Talks (10 min each)	

Wednesday, 28 September 2022

08:00	<i>BREAKFAST</i>	
09:00 – 09:20	Shen Zhao	Observation of bright hybridized interlayer exciton in MoTe ₂ /MoSe ₂ heterobilayers
09:20 – 10:05	Christoph Koch	Exploration of (hybrid) quasiparticles in quantum materials using high-resolution electron energy-loss spectroscopy
10:05 – 10:50	Frank Koppens (online)	Cryogenic photocurrent nanoscopy of twisted graphene
10:50 – 11:00	Scientific Organizers	Closing remarks
11:00 – 11:30	<i>End of the seminar and FAREWELL COFFEE / Departure</i>	