

Program (CET)

Sunday, 10 December 2023

17:00 – 21:00 ARRIVAL and REGISTRATION

18:00 *BUFFET SUPPER*

Monday, 11 December 2023

08:00 *BREAKFAST*

08:45 – 09:00 Organizers **Welcome**

Emulators: From Cold Atoms to Moire' Materials

09:00 – 09:45 Eugene Demler **Quantum Simulations of the Fermi Hubbard Model**

09:45 – 10:30 Dmitri Efetov **Strange Metal and Heavy Fermion Picture in MATBG**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 11:45 Elena Bascones **Heavy Quasiparticles and Cascades without Symmetry Breaking in Twisted Bilayer Graphene**

11:45 – 12:30 Shouvik Sur **Non-Fermi Liquids in Flat-band Systems**

12:30 – 12:45 **Conference Photo (outside at the main entrance)**

12:45 – 14:00 *LUNCH BREAK*

Program (CET)

Strange Metals: General Experiment

14:00 – 14:45	Girsh Blumberg	Spectroscopy of Strange Metals
14:45 – 15:30	Andrew Huxley	Charge Density Waves and Strange Metals
15:30 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 16:45	Poster Flash Presentations	
from 16:45	Poster Session	
18:30	<i>DINNER</i>	

Program (CET)

Tuesday, 12 December 2023

08:00 *BREAKFAST*

Topology, Flat Bands and Correlations

09:00 – 09:45	Silke Bühler-Paschen	Strange Metal Behavior – From Heavy Fermion Metals to Topological Semimetals
09:45 – 10:30	Ming Yi	Emergent Phases in Kagome and Pyrochlore Metals
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Emile Pangburn	Impurity-Bound States and Green's Function Zeros in Olvable Model of Mott Insulator
	Steffen Bollmann	Topological Green's Function Zeros
11:45 – 12:30	Laura Classen	Quantum Phase Transitions in Moiré Dirac Materials Quantum phase transitions in moiré Dirac materials
12:30 – 14:00	<i>LUNCH BREAK</i>	

Discussion Session

14:00 – 14:45	Discussion
14:45	Excursion
18:30	<i>DINNER</i>

Program (CET)

Wednesday, 13 December 2023

08:00 *BREAKFAST*

Heavy Fermions

09:00 – 09:45	Piers Coleman	New Insights into the Underlying Phenomenology of Strange Metals from Heavy Fermion Materials
09:45 – 10:30	Haoyu Hu	Unconventional Superconductivity from Fermi Surface Fluctuations in Strongly Correlated Metals
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Andreas Gleis	Strange Metallicity and Planckian Dissipation due to a Heavy Fermion Quantum Critical Point
	Mounica Mahankali	Quantum Entanglement Characterization of Kondo-destruction Quantum Critical Points
11:45 – 12:30	Filip Ronning	Excess Heat Capacity in Ce-based Heavy Fermion Antiferromagnets
12:30 – 14:00	<i>LUNCH BREAK</i>	

Strange Metals: General Theory

14:00 – 14:45	Jörg Schmalian	Tunable Non-Fermi Liquid Phase from Coupling to Two-level Systems
14:45 – 15:30	Olivier Parcollet	Planckian Metal at a Doping-Induced Quantum Critical Point
15:30 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 16:45	Davide Valentini	Superconductivity and Magnetotransport in Yukawa-SYK Lattice Theories for Non-Fermi Liquids
	Stefan Jorda	About the Wilhelm and Else Heraeus Foundation

Program (CET)

- 16:45 **Discussion**
- 18:30 *HERAEUS DINNER at the Physikzentrum (complimentary drinks)*
In Memoriam PW Anderson

Program (CET)

Thursday, 14 December 2023

08:00 *BREAKFAST*

Strange Metals Near Quantum Magnets

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| 09:00 – 09:45 | Hidenori Takagi | Highly Mobile Quantum Critical Bose Gas in 2D Limit in the Honeycomb Antiferromagnet YbCl₃ |
| 09:45 – 10:30 | Stephen Julian | Resistivity at a Pressure-induced Spin Density Wave Critical Point in Sr₃Ru₂O₇ |
| 10:30 – 11:00 | <i>COFFEE BREAK</i> | |
| 11:00 – 11:45 | Henri Menke | Superconductivity and Mottness in Organic Charge Transfer Materials |
| | David Abergel | Inside Nature Physics |
| 12:30 – 14:00 | <i>LUNCH BREAK</i> | |

Cuprates and Nickelates

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| 14:00 – 14:45 | Marco Grilli | Strange Metal Behavior by Overdamped Short-range Fluctuations in Cuprates and Elsewhere |
| 14:45 – 15:30 | Nigel Hussey | Exploring the Link Between Strange Metallicity and High-T_c Superconductivity in Electron- and Hole-doped Cuprates |
| 15:30 – 16:00 | <i>COFFEE BREAK</i> | |
| 16:00 – 16:23 | Steffen Bötzel | Electronic Correlations and Superconducting Instability in La₃Ni₂O₇ Under High Pressure |
| 16:23 – 17:10 | Stephen Hayden | Spin Fluctuations in the Normal State of Overdoped Cuprate Superconductors |
| 17:10 | Discussion | |
| 18:30 | <i>DINNER</i> | |

Program (CET)

Friday, 15 December 2023

08:00 *BREAKFAST*

Hydrodynamics and Transport

09:00 – 09:45	Blaise Goutéraux	Beyond Drude in Hydrodynamical Metals
09:45 – 10:30	Gaël Grissonnanche	Unraveling Electron Scattering in Strange Metals
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Kitinan Pongsangangan	Transport Properties of Charged Two-dimensional Dirac Systems in Hydrodynamic Regime: the Role of Dynamical Screening and Plasmons
	Anurag Banerjee	Strange Metal from Incoherent Bosons
11:45 – 12:30	Concluding Discussion	
12:00	<i>LUNCH</i>	

End of Seminar / Departure