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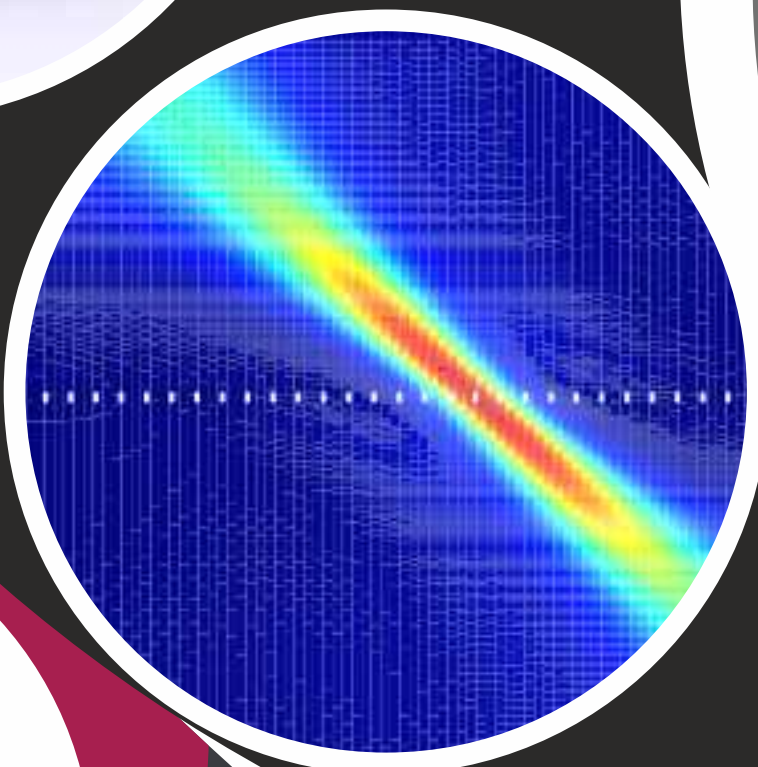
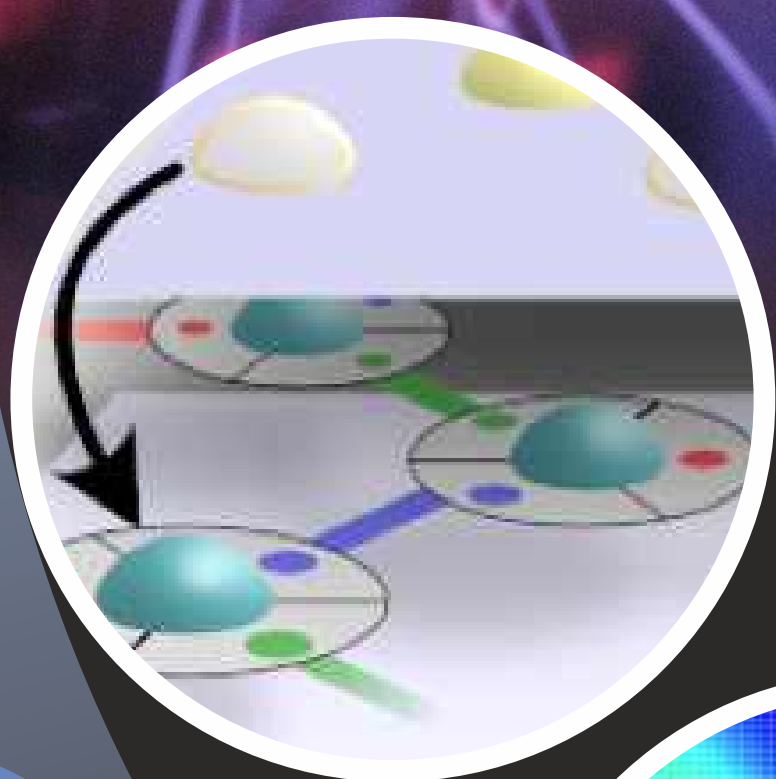


Workshop on the theory of
condensed quantum matter

Correlations in Novel Quantum Materials

June 9–11, 2021 • Stuttgart, Germany

Max Planck Institute for Solid State Research



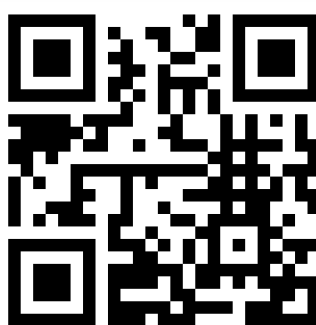
The workshop will be
virtually hosted by the
MPI for Solid State Research
in Stuttgart.

Powered by the ZOOM video
conferencing service.

Scope

Materials with strongly correlated
quantum particles are at the forefront of
present solid state research. Understanding the
experimental properties of novel quantum materials
crucially relies on the application of cutting-edge
analytical and numerical tools.

This workshop aims at bringing together world-leading
experts in both analytical and numerical theory to advance the
current perspective on important questions of the field: What
are the signatures of quantum order in newly synthesized
experimental setups? Which aspects of quantum materials
can be described on the model level? What are the
computational and algorithmic boundaries hindering
the solution of the many-body problem? What is
the nature of phase transitions between these
novel states of matter?



Further information at

www.fkf.mpg.de/cnqm2021

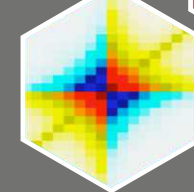
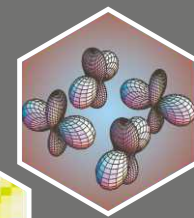
Organizing Committee

MPI for Solid State Research
Elio J. König

Thomas Schäfer

Contact

CNQM2021@fkf.mpg.de



Wednesday June 9, 2021			Program			Thursday June 10, 2021			Friday June 11, 2021		
CEDT AM	EDT AM					CEDT AM	EDT AM		CEDT AM	EDT AM	
08:50	02:50	Thomas Schäfer and Elio König Max Planck Institute for Solid State Research, Stuttgart Welcome									
		Tackling multiorbital systems									Signatures of correlations in dynamical response functions
09:00	03:00	Roser Valenti Institute for Theoretical Physics, Goethe University Frankfurt Kitaev models and materials: a conspiracy of spin, orbital and lattice degrees of freedom				09:00	03:00	Karsten Held Institute of Solid State Physics, TU Wien Nickelate superconductors – a renaissance of the one-band Hubbard model	09:00	03:00	Alessandro Toschi Institute of Solid State Physics, TU Wien Multifaceted aspects of non-perturbative scattering in many-electron physics
09:45	03:45	Erez Berg Weizmann Institute of Science New physics in flat moiré bands				09:45	03:45	Ulrich Schollwöck LMU Munich Matrix product states for real materials	09:45	03:45	Georg Rohringer University of Hamburg Breakdown of many-body perturbation theory in correlated electron systems
10:15	04:15	Coffee break				10:15	04:15	Coffee break	10:15	04:15	Coffee break
10:40	04:40	Lucile Savary ENS Lyon Unconventional magnetism in FCC materials and on the triangular lattice				10:40	04:40	Philipp Hansmann University of Nürnberg-Erlangen Sr ₂ RuO ₄ : From Hund's metal to Hund's superconductor?	10:40	04:40	Patrick Chalupa Institute of Solid State Physics, TU Wien Sticky electrons: When repulsion turns into attraction
11:10	05:10	Maria Daghofer University of Stuttgart Ca ₂ RuO ₄ as an excitonic magnet: Spin-orbit coupling and temperature				11:10	05:10	Giorgio Sangiovanni University of Würzburg Breakdown of low-energy protection in correlated bandstructures	11:10	05:10	Michel Ferrero École Polytechnique and Collège de France, Paris Pseudogap, magnetic correlations and Fermi surface topology in the Hubbard model
11:40	05:40	Ronny Thomale University of Würzburg Kagome metals				11:40	05:40	Mathias Scheurer University of Innsbruck Correlated many-body physics in moiré superlattices of graphene	11:40	05:40	Fedor Šimkovic École Polytechnique and Collège de France, Paris The Fermi-Hubbard Model from a Diagrammatic Monte Carlo Perspective
12:10	06:10	Lunch break				12:10	06:10	Lunch break	12:10	06:10	Lunch break
CEDT PM	EDT AM					CEDT PM	EDT AM				
02:10	08:10	Poster Ads I				02:10	08:10	Poster Ads II			
		Numerical approaches to quantum materials						Fractionalization and novel quantum order			Quantum criticality and emergence
02:30	08:30	Antoine Georges Collège de France, Paris and Flatiron Institute, New York Superconductivity, Stripes, Antiferromagnetism and the Pseudogap: What Do We Know Today about the 2D Hubbard model?				02:30	08:30	Piers Coleman Rutgers University and Royal Holloway, University of London Spin Fractionalization in Heavy Electron Materials	CEDT PM	EDT AM	Jörg Schmalian Institute for Theoretical Condensed Matter Physics, Karlsruhe Institute for Technology A quantum critical superconductor and its holographic dual
03:15	09:15	Lilia Boeri University of Rome Ab-initio design of new conventional superconductors				03:15	09:15	Inti Sodemann Max Planck Institute for the Physics of Complex Systems, Dresden The universal shear conductivity of spinon and electron Fermi surfaces	03:15	09:15	Matthias Vojta TU Dresden Emergent mesoscale antiferromagnetism near ferromagnetic quantum criticality
03:45	09:45	Coffee break				03:45	09:45	Coffee break	03:45	09:45	Coffee break
04:10	10:10	Anna Galler Institute of Solid State Physics, TU Wien Tackling electronic correlations in rare-earth compounds				04:10	10:10	Johannes Knolle TU Munich Anomalous Quantum Oscillations and Flat Plasmon Bands in Graphene on a Proximate Quantum Spin Liquid	04:10	10:10	Premala Chandra Rutgers University Novel Phases in Quantum Critical Polar Metals
04:40	10:40	Sabine Andergassen University of Tübingen Recent advancements in the functional renormalization group description of the 2D Hubbard model				04:40	10:40	Alexei Tselik Brookhaven National Laboratory Transmutation of statistics in the Kitaev-Kondo model	04:40	10:40	Snir Gazit The Hebrew University of Jerusalem Quantum phase transitions between orthogonal and normal fermions in metals and semi-metals
05:10	11:10	Marcel Klett Max Planck Institute for Solid State Research, Stuttgart A center focused approach to cellular dynamical mean field theory				05:10	11:10	Yashar Komijani University of Cincinnati Fractionalization in 1D Kondo lattices	05:10	11:10	Laura Classen Brookhaven National Laboratory Competing orders in graphene-based heterostructures
05:40	11:40	Gather / Poster				05:40	11:40	Gather / Poster	05:40	11:40	Gather and Farewell