Dipl.-Ing. Dr. rer. nat. Thomas SCHÄFER

HEAD OF THE INDEPENDENT MAX PLANCK RESEARCH GROUP
"THEORY OF STRONGLY CORRELATED QUANTUM MATTER" (SCQM)

Max Planck Institute for Solid State Research (MPI-FKF), Heisenbergstr. 1, 70569 Stuttgart
Nationality: Austrian, Date of Birth: 5th April 1987
Email: t.schaefer@fkf.mpg.de, Phone: +49 711 689-1758, Web: http://fkf.mpg.de/schaefer
Google Scholar: https://scholar.google.com/citations?user=aJBvSKAAAAAJ&hl=en

CURRICULUM VITAE AT A GLANCE

POSITIONS HELD AFTER PhD

2020 – today	**Independent Max Planck Research Group leader** "Theory of Strongly Correlated Quantum Matter" Max Planck Institute for Solid State Research (MPI-FKF), Stuttgart, Germany
2019 – 2020	**Erwin-Schrödinger Fellow** hosted by Prof. Antoine Georges, funded by the FWF École Polytechnique and Collège de France, Paris, France
2017 – 2019	**Postdoctoral Researcher** hosted by Prof. Antoine Georges École Polytechnique and Collège de France, Paris, France
2016 – 2017	**Postdoctoral Researcher** hosted by Prof. Alessandro Toschi TU Wien, Vienna, Austria

UNIVERSITY EDUCATION

2013 – 2016	**Doctor rerum naturalium (PhD)** awarded with highest honors "*sub auspiciis praesidentis rei publicae*" Thesis "*Classical and quantum phase transitions in strongly correlated electron systems*" supervised by Prof. Karsten Held and Prof. Alessandro Toschi TU Wien, Vienna, Austria
2010 – 2012	**Mathematical and Theoretical Physics - Master of Science** awarded with highest honors Thesis "*Electronic correlations at the Two-Particle Level*" supervised by Prof. Alessandro Toschi TU Wien, Vienna, Austria
2007 – 2010	**Technical Physics - Bachelor of Science** awarded with highest honors Thesis "*Numerical Simulation of μSR for specific Kondo-systems*" supervised by Prof. Herwig Michor TU Wien, Vienna, Austria

PUBLICATION and DISSEMINATION OVERVIEW (as of 31st January 2025)

- **33 peer-reviewed Publications**: 1 Nature Communications, 1 Proceedings of the National Academy of Sciences, 2 Physical Review X, 9 Physical Review Letters, 1 Annual Review, 2 Physical Review Research, 1 SciPost Physics, 11 Physical Review B, 5 other journals (see Publication Activities attached)
- **Citations Metrics:** 2,282 citations, h-index 22 (Google Scholar) – 1,429 citations, h-index 21 (Web of Science)
  Dissemination: 24 invited and 23 contributed talks at (international) conferences, workshops, seminars or colloquia, 11 posters
- **Organizer** of the international workshop "Correlations in Novel Quantum Materials" CNQM2021/2022/2023
  (100 participants each, 24 speakers each, https://www.fkf.mpg.de/cnqm2023)

TEACHING and SCIENTIFIC SUPERVISION

- **Lectures and exercises "Solid State Theory"**, International Master's Program Physics, University of Stuttgart (SS 2022/23)
- Co-lecturer at École Polytechnique (**Advanced Quantum Theory**, 2019) and TU Wien (**Advanced Theory of Superconductivity and Magnetism**, 2016)
- **Permission to hand in a Habilitation Thesis** at the University of Stuttgart (2024), **Permission as main PhD supervisor**
- Current **supervision** activity 2 PhD students (Erstbetreuer)
- Past (co-)supervision activity 2 Postdocs, 4 Master students, 3 Bachelor students, 4 internship students

FUNDING OF approx. 1.6M EUR

2020 – today	Independent Max Planck Research Group | Budget: 1.4M EUR for 5 years | Max Planck Society
2022, 2023	Workshop "Correlations in Novel Quantum Materials" | Budget: 42k USD | ICAM
2019 – 2020	Erwin-Schrödinger Fellowship | Budget: 160k EUR | Austrian Science Fund (FWF)
2017	Excellence Scholarship of the Austrian Federal Ministry of Education, Science and Research | Budget: 9k EUR | Austrian Federal Ministry of Education, Science and Research

AWARDS and OTHER SCIENTIFIC ACTIVITIES OVERVIEW

- Short-listed ("Berufungsvorschlag") for a Full Professorship on "Theoretical Solid State Physics", University of Innsbruck (October 2024)
- First place Tenure Track to Associate Professor in Condensed Matter Physics (RTDb), Università degli Studi Trieste (August 2024)
- Successful prolongation Independent Max Planck Research Group for additional two years (until November 2027)
- Principal Investigator Max-Planck Graduate Center for Quantum Materials
- Principal Investigator of the International Max-Planck Research School for Condensed Matter Science
- External Reviewer for the National Science Center, Poland and Agence nationale de la recherche (ANR), France
- Referee for Nature, Nature Communications, Physical Review Letters, Physical Review B, Europhysics Letters, and other scientific journals
- Regular mid-term stays at the Center for Computational Quantum Physics (CCQ), Flatiron Institute, New York, USA
- "Emerging Leader" 2020 by the Journal of Physics, Condensed Matter
- Award for an outstanding diploma thesis of the City of Vienna 2013

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Nationality: Austrian, Date of Birth: 5th April 1987
Email: t.schaefer@fkf.mpg.de, Phone: +49 711 689-1758, Web: http://fkf.mpg.de/schaefer

CURRICULUM VITAE

RESEARCH INTERESTS

Strongly Correlated Electron Systems

- (Twisted) moiré transition metal dichalcogenides, cuprates, ruthenates, nickelates, organic superconductors, heavy fermions
- Mott-Hubbard metal-insulator transition
- Physics of the Hubbard model
- Low-dimensional systems
- Spin-orbit coupling

Frustrated Magnetic Systems

- Geometric frustration
- Metal-insulator transitions
- Chirality

Quantum Criticality

- Quantum and classical critical phenomena
- Quantum magnetism
- Electronic Kohn anomalies

High-temperature Superconductivity

- Pseudogap physics
- Unconventional pairing mechanisms

Quantum Many-Body Techniques

- Multi-method, multi-messenger approach
- quantum Monte Carlo, impurity solvers
- Dynamical mean field theory (DMFT)
- Cluster (CDMFT, DCA) and diagrammatic (DΓA, TRILEX) extensions of DMFT
- Many-particle Green functions and Luttinger-Ward formalism in the non-perturbative regime
- Fluctuation diagnostics and parquet decomposition

POSITIONS HELD AFTER PhD

2020 – today **Independent Max Planck Research Group leader** "Theory of Strongly Correlated Quantum Matter"
Max Planck Institute for Solid State Research (MPI-FKF), Stuttgart, Germany
hosted by the Max-Planck Institute for Solid State Research (MPI-FKF), Stuttgart (Germany)

appointed ("Ruf") initially for five years by the president of the Max-Planck society (MPG) following the suggestions of an independent search commission
November 2024: Successful prolongation for additional two years (until November 2027) after evaluation by external referees

- Funding: W2 salary for the head of the research group, coverage of one postdoc and one PhD position, competitive research expenditure coverage and initial equipment (spent on HPC cluster "Bordeaux"), amounting to a total budget of approx. 1.4M EUR (five years)
- Permission as a principal supervisor (Erstbetreuer) of PhD students granted by the University of Stuttgart, Member of the PhD Commission of the MPI-FKF
- Principal Investigator Max-Planck Graduate Center for Quantum Materials, https://www.quantummaterials.mpg.de
- Principal Investigator of the International Max-Planck Research School for Condensed Matter Science, https://www.imprs-cms.mpg.de

2019 – 2020 **Erwin-Schrödinger Fellow** hosted by Prof. Antoine Georges
École Polytechnique and Collège de France, Paris, France

FWF project J-4266, hosted by Prof. Antoine Georges (École Polytechnique and Collège de France, Paris, France with regular visits to the Center for Computational Quantum Physics, Flatiron Institute, New York, USA), principal investigator with a budget of 160k EUR

2017 – 2019 **Postdoctoral Researcher** hosted by Prof. Antoine Georges
École Polytechnique and Collège de France, Paris, France

2016 – 2017 **Postdoctoral Researcher** hosted by Prof. Alessandro Toschi
TU Wien, Vienna, Austria

Dipl.-Ing. Dr. rer. nat. Thomas SCHÄFER

HEAD OF THE INDEPENDENT MAX PLANCK RESEARCH GROUP SCQM

CURRICULUM VITAE

EDUCATION

2013 – 2016 **Doctor rerum naturalium (PhD)** awarded with highest honors "*sub auspiciis praesidentis rei publicae*"
TU Wien, Vienna, Austria
Thesis "*Classical and quantum phase transitions in strongly correlated electron systems*" supervised by Prof. Karsten Held and Prof. Alessandro Toschi
"*Promotio sub auspiciis Praesidentis rei publicae*" on the 05/12/2017 (highest achievable honor for university and school studies, promotion by the federal president of Austria, Dr. Alexander Van der Bellen in person), every final grade in high school and university studies was the highest possible ("sehr gut", 1.0)
funded by Austrian Science Fund Doctoral School "Building Solids for Function", http://solids4fun.tuwien.ac.at

2010 – 2012 **Mathematical and Theoretical Physics - Master of Science** awarded with highest honors
TU Wien, Vienna, Austria
Thesis "Electronic correlations at the Two-Particle Level" supervised by Prof. Alessandro Toschi awarded with the Award for an outstanding and excellent thesis of the City of Vienna (2013)
Diploma student funded by the FWF project "Quantum criticality in strongly correlated magnets (QMC)" (I 610-N16) under the supervision of Prof. Alessandro Toschi

2007 – 2010 **Technical Physics - Bachelor of Science** awarded with highest honors
TU Wien, Vienna, Austria
Thesis "Numerical Simulation of μSR for specific Kondo-systems"
under the supervision of Prof. Herwig Michor

2001 – 2006 **School leaving examinations - Reife- und Diplomprüfung awarded with highest honors**
HTBLuVA St. Pölten (Higher Technical College for Informatics), St. Pölten, Austria

1997 – 2001 **Grammar School**
Piaristengymnasium Krems, Krems an der Donau, Austria

REFERENCE CONTACTS AND COLLABORATION PARTNERS

Reference Contacts and Current and Former Collaboration Partners

- **Prof. Antoine Georges** (host Erwin-Schrödinger Fellowship, postdoctoral supervisor; research partner; Director CCQ, Flatiron institute, Collège de France and École Polytechnique)
  ageorges@flatironinstitute.org
- **Prof. Karsten Held** (Doktorvater, research partner; TU Wien)
  held@ifp.tuwien.ac.at
- **Prof. Roser Valentí** (research partner; Goethe-Universität Frankfurt am Main)
  valenti@itp.uni-frankfurt.de
- **Prof. Andrew J. Millis** (research partner; Columbia University, Co-Director CCQ, Flatiron institute)
  amillis@flatironinstitute.org
- **Prof. Bernhard Keimer** (research partner; Director Max-Planck-Institute for Solid State Research)
  b.keimer@fkf.mpg.de
- **Prof. Alessandro Toschi** (supervisor Master, co-supervisor PhD thesis, research partner; TU Wien)
  toschi@ifp.tuwien.ac.at
- **Prof. Giorgio Sangiovanni** (research partner; University of Würzburg)
  sangiovanni@physik.uni-wuerzburg.de
- **Prof. Walter Metzner** (Director Max-Planck-Institute for Solid State Research)
  metzner@fkf.mpg.de
- **Prof. Philipp Hansmann** (research partner; Friedrich-Alexander-Universität Erlangen-Nürnberg)
  philipp.hansmann@fau.de
- **Prof. Sabine Andergassen** (research partner; TU Wien)
  sabine.andergassen@tuwien.ac.at
- **Prof. Markus Aichhorn** (research partner; TU Graz)
  aichhorn@tugraz.at

CURRICULUM VITAE

TEACHING

2024 **Invited Lecture "Theory of Unconventional Superconductivity: Cuprates and Nickelates"**
International Max Planck Research School Winter School: "T_c on the rise - Novel Trends in Superconductivity", Max Planck Institute for Solid State Research, Stuttgart

2024 **Invited Lectures**
School "Modeling strongly correlated electrons: Numerics, analytics, and quantum simulations"
Arnold Sommerfeld Center for Theoretical Physics, LMU in Munich
https://www.theorie.physik.uni-muenchen.de/activities/schools/archiv/asc_school_2024/index.html

2024 **Invitation for Submitting a Habilitation Thesis**
University of Stuttgart

2022, 2023 **Lectures and exercises "Solid State Theory"**
International Master's Program in Physics, University of Stuttgart

2019 **Exercises on "Advanced Quantum Physics"**
Bachelor Programme, École Polytechnique

2018 – 2019 **Supervisor for Projet de Recherche en Laboratoire (PRL)**
École Polytechnique

2013 – 2016 **Organizer and teaching assistant** for the lectures "Quantum Theory I" (2013), "Quantum Theory II" (2014) and "Quantum Field Theory for Many-Body Systems" (2015), **Lecturer substitute for "Advanced Theory of Superconductivity and Magnetism"** (2016)
TU Wien

2009 – 2013 Extensive **Tutoring activities** at the TU Wien (7 distinct subjects)

SCIENTIFIC SUPERVISION

Current supervision activity 2 PhD students (Erstbetreuer), 1 Master student
Past (co-)supervision activity 2 Postdocs, 3 Master students, 3 Bachelor students, 4 internship students

2023 – 2023 **Dr. Henri Menke**
Postdoc, SCQM, MPI-FKF
now at Max Planck Computing and Data Facility (MPCDF) Garching

2020 – 2023 **Dr. Marcel Klett**
Postdoc, SCQM, MPI-FKF
now at Allianz Insurance

2021 – today **Mário Malcolms de Oliveira: "Non-local correlations in frustrated magnetic systems"**
PhD thesis, SCQM, MPI-FKF

2022 – today **Michael Meixner: "Vertex divergencies on the real frequency axis"**
PhD thesis, SCQM, MPI-FKF, Stuttgart 2022-ongoing

2022 – today **Patrick Tscheppe: "Interplay of disorder and strong correlations"**
Master Thesis, SCQM, MPI-FKF

2020 – 2021 **Michael Meixner: "On the Phase Diagram of the Hubbard-Model in Real-Space Extensions of Dynamical Mean Field Theory"**
Master Thesis, SCQM, MPI-FKF

2022 **Patrick Tscheppe: "Non-local correlations in Twisted Moiré Dichalcogenides"**
Bachelor Thesis, SCQM, MPI-FKF

2021 **Patrick Tscheppe: "The Hubbard dimer in a magnetic field"**
Internship Project, SCQM, MPI-FKF

2015 – 2020 (Co-)supervision of 4 Master students, one Bachelor student, 3 internship students

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SCIENTIFIC DISSEMINATION

23 invited and 23 contributed talks at (international) conferences, workshops, seminars or colloquia
11 contributed posters

Recent Highlights

2024 **Correlations and geometric frustration – a happy marriage?**
NAWI Physics Colloquium Graz, TU Graz

2022 **Multimethod, multimessenger approaches to strongly correlated systems**
Hauptvortrag (Invited Talk) at DPG Meeting Regensburg

Multimethod, multimessenger approaches to strongly correlated systems
Physikalisches Kolloquium Tübingen, Germany

It Takes Two to Tango - Condensed Matter Physics Beyond Single-Particle Quantum Mechanics
Trinity College Science Society, Cambridge University, United Kingdom

2021 **How to Read between the Lines of Electronic Spectra: the Diagnostics of Fluctuations in Strongly Correlated Electron Systems**
Collège de France, Public Seminar, Paris, France

Taking locality to the next level: vertex-based extensions of DMFT and their application
Stuttgarter Physikalisches Kolloquium, Stuttgart, Germany

FUNDING

2020 – today **Independent Max Planck Research Group | Budget: 1.4M EUR for 5 years | Max Planck Society**
W2 salary for the head of the research group, coverage of one postdoc and one PhD position, competitive research expenditure coverage and initial equipment (spent on HPC cluster "Bordeaux")

2022, 2023 **Workshop "Correlations in Novel Quantum Materials" | Budget: 42k USD | ICAM**

2019 – 2020 **Erwin-Schrödinger Fellowship | Budget: 160k EUR | Austrian Science Fund (FWF)**
Principal Investigator of the FWF project J-4266
"SuMo - Superconductivity in the vicinity of Mott insulators"

2017 **Excellence Scholarship of the Austrian Federal Ministry of Education, Science and Research | Budget: 9k EUR | Austrian Federal Ministry of Education, Science and Research**
Principal Investigator of "Quantum criticality in the two-dimensional periodic Anderson model"

HONORS AND AWARDS

2020 "Emerging Leader" 2020 by the Journal of Physics, Condensed Matter
2019 Erwin-Schrödinger Fellow funded by the Austrian Science Fund FWF
2018 Awardee of the Scholarship of Excellence of the Federal Ministry of Education
2018 Finalist of the Dissertation-Prize Symposium of the Condensed Matter Division of the DPG
2016 Admission to "Promotio sub auspiciis Praesidentis rei publicae"
2015 Young Scientist Attendee of the 65th Interdisciplinary Lindau Nobel Laureate Meeting
2013 Award for an outstanding and excellent diploma thesis of the City of Vienna
2011 Attendee of the official CERN summer student programme
2010/2012 Awardee of the Stiftungsstipendium of the TU Wien
2008/2009 Awardee of the student scholarships of the Faculty for Physics of the TU Wien

CURRICULUM VITAE

OTHER SCIENTIFIC ACTIVITIES AND MEMBERSHIPS

- Short-listed ("Berufungsvorschlag") for Full Professorship on "Theoretical Solid State Physics", University of Innsbruck (October 2024)
- First place Tenure Track to Associate Professor (RTDb), Università degli Studi Trieste (August 2024)
- Successful prolongation Independent Max Planck Research Group for additional two years (until November 2027), after evaluation by external referees (November 2024)

- External examiner Master Thesis Project, African Institute for Mathematical Sciences, South Africa
- External examiner Tenure Evaluation, University of Windsor, Canada
- External reviewer for the National Science Center, Poland and Agence nationale de la recherche (ANR), France
- Referee for Nature, Nature Communications, Physical Review Letters, Physical Review B, Europhysics Letters, Physica Status Solidi and SN Applied Sciences
- Regular mid-term stays at the Center for Computational Quantum Physics, Flatiron Institute, New York, USA: February 2020, February 2019, October 2018, February 2018
- Member of the PhD Commission of the MPI-FKF
- Principal Investigator Max-Planck Graduate Center for Quantum Materials, https://www.quantummaterials.mpg.de
- Principal Investigator of the International Max-Planck Research School for Condensed Matter Science, https://www.imprs-cms.mpg.de

- Attendee Workshop "Unconscious Bias" by Dr. Siara Isaac (EPFL), MPI-FKF 2024

- Organizer of the International Monthly Symposium on DMFT/Quantum Embedding (online)
- Organizer of the International Workshop "Correlations in Novel Quantum Materials" at the MPI-FKF together with Elio König (online 2021, in person 2022 and 2023), https://www.fkf.mpg.de/cnqm2023
- Organizer of the joint "Seminar on Condensed Matter Physics", MPI-FKF and EKUT Tübingen (2020-2021)
- Organizer of the "Condensed Matter Theory Seminar", Collège the France (2019-2020)
- Organizer of the "Condensed Matter Theory Journal Club", Institute of Solids State Physics (2016)
- Student organizer of the "International Conference on the Applications of the Mössbauer Effect" (ICAME2009), TU Wien

- Member of the American Physical Society (APS)
- Member of the German Physical Society (DPG)
- Member of the Deutsche Hochschulverband (DHV)

LANGUAGE SKILLS

- German: mother tongue
- English: C1 Level in Listening, Reading, Writing
- French: A1 Level in Listening, Reading, Writing

OTHER SKILLS

- Jury member "German Wine Ambassadors 2024" [German Wine Institute (DWI)]
- Jury member "The Best Wineries of Germany 2025" (Der FEINSCHMECKER magazine)
- Germany's Wine Champion 2023 [German Wine Institute (DWI) and Der FEINSCHMECKER magazine]
- WSET Level 3 Award in Wines, pass with distinction
- Assistant Sommelier (WSET Level 2, pass with distinction)
- Scuba Diving License (PADI)
- Competitive Ballroom Dancing
- Delegate to the European Youth Parliament, Berlin November 2004

CURRICULUM VITAE

PUBLICATION RECORD (as of 31st January 2025)

- **33 peer-reviewed Publications**: 1 Nature Communications, 1 Proceedings of the National Academy of Sciences, 2 Physical Review X, 9 Physical Review Letters, 1 Annual Review, 2 Physical Review Research, 1 SciPost Physics, 11 Physical Review B, 5 other journals
- **Citations Metrics:** 2,282 citations, h-index 22 (Google Scholar) – 1,429 citations, h-index 21 (Web of Science) – 1,445 citations, h-index 20 (Scopus)
- Google Scholar: https://scholar.google.com/citations?user=aJBvSKAAAAAJ&hl=en
  ORCID: 0000-0002-1105-5619, ResearcherID: B-9424-2017

Peer-reviewed Journal Publications (top 5 Publications after PhD are marked by an asterix *)

*** Superconductivity and Mottness in Organic Charge Transfer Materials**
Henri Menke, Marcel Klett, Kazushi Kanoda, Antoine Georges, Michel Ferrero, and Thomas Schäfer
Physical Review Letters **133**, 136501 (2024), https://doi.org/10.1103/PhysRevLett.133.136501

Thermodynamic Stability at the Two-Particle Level
A. Kowalski, M. Reitner, L. Del Re, M. Chatzieleftheriou, A. Amaricci, A. Toschi, L. de' Medici, G. Sangiovanni, and T. Schäfer
Physical Review Letters **133**, 066592 (2024), https://doi.org/10.1103/PhysRevLett.133.066502

Precise many-body simulations of antiferromagnetic phases using broken-symmetry perturbative expansions
R. Garioud, F. Šimkovic IV, R. Rossi, G. Spada, T. Schäfer, F. Werner, M. Ferrero
Physical Review Letters **132**, 246505 (2024), https://doi.org/10.1103/PhysRevLett.132.246505

Mott transition and pseudogap of the square-lattice Hubbard model: results from center-focused cellular dynamical mean-field theory
Michael Meixner, Henri Menke, Marcel Klett, Sarah Heinzelmann, Sabine Andergassen, Philipp Hansmann, and Thomas Schäfer
SciPost Physics **16**, 059 (2024), https://doi.org/10.21468/SciPostPhys.16.2.059

*** Magnetism and Metallicity in Moiré Transition Metal Dichalcogenides**
Patrick Tscheppe, Jiawei Zang, Marcel Klett, Seher Karakuzu, Armelle Celarier, Zhengqian Cheng, Thomas A. Maier, Michel Ferrero, Andrew J. Millis, and Thomas Schäfer
Proceedings of the National Academy of Sciences **121**, 3 (2024), https://doi.org/10.1073/pnas.2311486121

Mott insulators with boundary zeros
Niklas Wagner, Lorenzo Crippa, Adriano Amaricci, Philipp Hansmann, Marcel Klett, Elio König, Thomas Schäfer, Domenico Di Sante, Jennifer Cano, Andrew Millis, Antoine Georges, Giorgio Sangiovanni
Nature Communications **14**, 7531 (2023), https://doi.org/10.1038/s41467-023-42773-7

Strongly correlated superconductivity with long-range spatial fluctuations
Motoharu Kitatani, Ryotaro Arita, Thomas Schäfer, Karsten Held
J. Phys. Mater. **5**, 034005 (2022), https://doi.org/10.1088/2515-7639/ac7e6d

*** Magnetic correlations in infinite-layer nickelates: an experimental and theoretical multi-method study**
R. A. Ortiz, P. Puphal, M. Klett, F. Hotz, R. K. Kremer, H. Trepka, M. Hemmida, H.-A. Krug von Nidda, M. Isobe, R. Khasanov, H. Luetkens, P. Hansmann, B. Keimer, T. Schäfer, M. Hepting
Physical Review Research **4**, 023093 (2022), https://doi.org/10.1103/PhysRevResearch.4.023093

Magnetic properties and pseudogap formation in infinite-layer nickelates: insights from the single-band Hubbard model
Marcel Klett, Philipp Hansmann, and Thomas Schäfer
Frontiers in Physics **10**, 834682 (2022), https://doi.org/10.3389/fphy.2022.834682

PUBLICATION RECORD (continued)

*** The Hubbard model: A computational perspective**
Mingpu Qin, Thomas Schäfer, Sabine Andergassen, Philippe Corboz, Emanuel Gull
Annual Review of Condensed Matter Physics Vol. **13**, 275-302 (2022), https://doi.org/10.1146/annurev- conmatphys-090921-033948

Comparing the effective enhancement of local and non-local spin-orbit couplings on honeycomb lattices due to strong electronic correlations
Markus Richter, Johannes Graspeuntner, Thomas Schäfer, Nils Wentzell, Markus Aichhorn
Phys. Rev. B **104**, 195107 (2021), https://doi.org/10.1103/PhysRevB.104.195107

Mott insulating states with competing orders in the triangular lattice Hubbard model
Alexander Wietek, Riccardo Rossi, Fedor Šimkovic IV, Marcel Klett, Philipp Hansmann, Michel Ferrero, E. Miles Stoudenmire, Thomas Schäfer, and Antoine Georges
Phys. Rev. X **11**, 041013 (2021), https://doi.org/10.1103/PhysRevX.11.041013

*** Tracking the Footprints of Spin Fluctuations: A Multi-Method, Multi-Messenger Study of the Two-Dimensional Hubbard Model**
Thomas Schäfer, Nils Wentzell, Fedor Šimkovic IV, Yuan-Yao He, Cornelia Hille, Marcel Klett, Christian J. Eckhardt, Behnam Arzhang, Viktor Harkov, François-Marie Le Régent, Alfred Kirsch, Yan Wang, Aaram J. Kim, Evgeny Kozik, Evgeny A. Stepanov, Anna Kauch, Sabine Andergassen, Philipp Hansmann, Daniel Rohe, Yuri M. Vilk, James P. F. LeBlanc, Shiwei Zhang, A.-M. S. Tremblay, Michel Ferrero, Olivier Parcollet, and Antoine Georges
Phys. Rev. X **11**, 011058 (2021), https://dx.doi.org/10.1103/PhysRevX.11.011058

How to read between the lines of electronic spectra: the diagnostics of fluctuations in strongly correlated electron systems
Thomas Schäfer and Alessandro Toschi
J. Phys.: Condens. Matter **33**, 214001 (2021), Special Issue: Emerging Leaders 2020, https://dx.doi.org/10.1088/1361-648X/abeb44

Fingerprints of the local moment formation and its Kondo screening in generalized susceptibilities of many-electron problems
P. Chalupa, T. Schäfer, M. Reitner, D. Springer, S. Andergassen, and A. Toschi
Phys. Rev. Lett. **126**, 056403 (2021), https://dx.doi.org/10.1103/PhysRevLett.126.056403

Anisotropy of electronic correlations: On the applicability of local theories to layered materials
B. Klebel, T. Schäfer, A. Toschi, and J. M. Tomczak
Phys. Rev. B **103**, 045121 (2021), https://doi.org/10.1103/PhysRevB.103.045121

Real-space cluster dynamical mean-field theory: Center focused extrapolation
M. Klett, N. Wentzell, T. Schäfer, F. Simkovic IV, O. Parcollet, S. Andergassen, and P. Hansmann
Phys. Rev. Research **2**, 033476 (2020), https://doi.org/10.1103/PhysRevResearch.2.033476

Quantum Criticality in the Two-Dimensional Periodic Anderson Model
T. Schäfer, A. A. Katanin, M. Kitatani, A. Toschi, K. Held
Phys. Rev. Lett. **122**, 227201 (2019), https://doi.org/10.1103/PhysRevLett.122.227201

Why Tc is so low in high-Tc cuprates: importance of the dynamical vertex structure
M. Kitatani, T. Schäfer, H. Aoki, K. Held
Phys. Rev. B **99**, 041115(R) (2019), https://doi.org/10.1103/PhysRevB.99.041115

Divergences of the irreducible vertex functions in correlated metallic systems: insight from AIM
P. Chalupa, P. Gunacker, T. Schäfer, K. Held, and A. Toschi
Phys. Rev. B **97**, 245136 (2018), https://doi.org/10.1103/PhysRevB.97.245136

CURRICULUM VITAE

PUBLICATION RECORD (continued)

Complementary views on electron spectra: From Fluctuation Diagnostics to real space correlations **PhD**
O. Gunnarsson, J. Merino, T. Schäfer, G. Sangiovanni, G. Rohringer, and A. Toschi
Phys. Rev. B **97**, 125134 (2018), https://doi.org/10.1103/PhysRevB.97.125134

Breakdown of traditional many-body theories for correlated electrons
O. Gunnarsson, G. Rohringer, T. Schäfer, G. Sangiovanni, and A. Toschi
Phys. Rev. Lett. **119**, 056402 (2017), https://doi.org/10.1103/PhysRevLett.119.056402

Interplay of correlations and Kohn anomalies in three dimensions: quantum criticality with a twist
T. Schäfer, A. A. Katanin, K. Held, and A. Toschi
Phys. Rev. Lett. **119**, 046402 (2017), https://doi.org/10.1103/PhysRevLett.119.046402

Non-perturbative landscape of the Mott-Hubbard transition: Multiple divergence lines around the MIT
T. Schäfer, S. Ciuchi, M. Wallerberger, P. Thunström, O. Gunnarsson, G. Sangiovanni, G. Rohringer, and A. Toschi
Phys. Rev. B **94**, 235108 (2016), https://doi.org/10.1103/PhysRevB.94.235108

Parquet decomposition calculations of the electronic self-energy
O. Gunnarsson, T. Schäfer, J. P. F. LeBlanc, J. Merino, G. Sangiovanni, G. Rohringer, and A. Toschi
Phys. Rev. B **93**, 245102 (2016) featured as Editor's Suggestion http://dx.doi.org/10.1103/PhysRevB.93.245102

Fluctuation Diagnostics of the Electron Self-Energy: Origin of the Pseudogap Physics
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