

List of publications W. Metzner

Andreas Eberlein, Walter Metzner, Subir Sachdev, and Hiroyuki Yamase

Fermi surface reconstruction and drop of Hall number due to spiral antiferromagnetism in high- T_c cuprates

Phys. Rev. Lett. **117**, 187001 (2016)

Hiroyuki Yamase, Andreas Eberlein, and Walter Metzner

Coexistence of incommensurate magnetism and superconductivity in the two-dimensional Hubbard model

Phys. Rev. Lett. **116**, 096402 (2016)

Tobias Holder and Walter Metzner

Fermion loops and improved power-counting in two-dimensional critical metals with singular forward scattering

Phys. Rev. B **92**, 245128 (2015)

Tobias Holder and Walter Metzner

Anomalous dynamical scaling from nematic and U(1) gauge field fluctuations in two-dimensional metals

Phys. Rev. B **92**, 041112 (2015)

Walter Metzner

Functional Renormalization Group Approach to Interacting Fermi Systems: DMFT as a Booster Rocket

In: Autumn School on correlated Electrons: DMFT at 25: infinite dimensions, Eds. Eva Pavarini, Erik Koch, Dieter Vollhardt and Alexander Lichtenstein, Schriften des Forschungszentrums Jülich, Reihe Modeling and Simulations Vol. **4** (2014)

Tobias Holder and Walter Metzner

Non-Fermi liquid behavior at the onset of incommensurate $2k_F$ charge or spin density wave order in two dimensions

Phys. Rev. B **90**, 094404 (2014)

C. Taranto, S. Andergassen, J. Bauer, K. Held, A. Katanin, W. Metzner, G. Rohringer, and A. Toschi

From infinite to two dimensions through the functional renormalization group

Phys. Rev. Lett. **112**, 196402 (2014)

Jing Wang, Andreas Eberlein, and Walter Metzner

Competing order in correlated electron systems made simple: Consistent fusion of functional renormalization and mean-field theory

Phys. Rev. B **89**, 121116(R) (2014)

List of publications W. Metzner

Andreas Eberlein and Walter Metzner

Superconductivity in the two-dimensional t-t'-Hubbard model

Phys. Rev. B **89**, 35126 (2014)

Andreas Eberlein and Walter Metzner

Effective interactions and fluctuation effects in spin-singlet superfluids

Phys. Rev. B **87**, 174523 (2013)

B. Obert, C. Husemann, and W. Metzner

Low-energy singularities in the ground state of fermionic superfluids

Phys. Rev. B **88**, 144508 (2013)

Tobias Holder and Walter Metzner

Incommensurate nematic fluctuations in two-dimensional metals

Phys. Rev. B **85**, 165130 (2012)

Christoph Husemann and Walter Metzner

Incommensurate nematic fluctuations in the two-dimensional Hubbard model

Phys. Rev. B **86**, 085113 (2012)

Walter Metzner, Manfred Salmhofer, Carsten Honerkamp, Volker Meden, Kurt Schönhammer

Functional renormalization group approach to correlated fermion systems

Rev. Mod. Phys. **84**, 299 (2012)

Hiroyuki Yamase and Walter Metzner

Fermi surface truncation from thermal nematic fluctuations

Phys. Rev. Lett. **108**, 186405 (2012)

J. Bauer, P. Jakubczyk, and W. Metzner

Critical temperature and Ginzburg region near a quantum critical point in two-dimensional metals

Phys. Rev. B **84**, 075122 (2011)

Benjamin Obert, So Takei, and Walter Metzner

Anomalous criticality near semimetal-to-superfluid quantum phase transition in a two-dimensional Dirac cone model

Ann. Phys. **523**, 621 (2011)

Stephan C. Thier and Walter Metzner

Singular order parameter interaction at nematic quantum critical point in two dimensional electron systems

Phys. Rev. B **84**, 155133 (2011)

List of publications W. Metzner

H. Yamase, P. Jakubczyk, and W. Metzner
Nematic quantum criticality without order
Phys. Rev. B **83**, 125121 (2011)

A. Eberlein and W. Metzner
Parametrization of Nambu vertex in a singlet superconductor
Prog. Theor. Phys. **124**, 471 (2010)

P. Jakubczyk, J. Bauer, and W. Metzner
Finite temperature crossovers near quantum tricritical points in metals
Phys. Rev. B **82**, 045103 (2010)

P. Strack, S. Takei, and W. Metzner
Anomalous scaling of fermions and order parameter fluctuations at quantum criticality
Phys. Rev. B **81**, 125103 (2010)

P. Jakubczyk, W. Metzner, and H. Yamase
Turning a First Order Quantum Phase Transition Continuous by Fluctuations: General Flow Equations and Application to *d*-Wave Pomeranchuk Instability
Phys. Rev. Lett. **103**, 239904 (2009)

R. Gersch, C. Honerkamp, and W. Metzner
Superconductivity in the attractive Hubbard model: functional renormalization group analysis
New J. Phys. **10**, 045003 (2008)

P. Jakubczyk, P. Strack, A. A. Katanin, and W. Metzner
Renormalization group theory for phases with broken discrete symmetry near quantum critical points
Phys. Rev. B **77**, 195120 (2008)

W. Metzner and L. Dell'Anna
Non-Fermi liquid behavior from critical Fermi surface fluctuations
Progress of Theoretical Physics, Suppl. **2008**, 22 (2008)

P. Strack, R. Gersch, and W. Metzner
Renormalization group flow for fermionic superfluids at zero temperature
Phys. Rev. B **78**, 014522 (2008)

L. Dell'Anna and W. Metzner
Electrical resistivity near Pomeranchuk instability in two dimensions
Phys. Rev. Lett. **98**, 136402 (2007)

W. Metzner and L. Dell'Anna
Fermi surface fluctuations and breakdown of Fermi liquid behavior
Physica C **460**, 1105 (2007)

List of publications W. Metzner

J. Reiss, D. Rohe, and W. Metzner

Renormalized mean-field analysis of antiferromagnetism and d -wave superconductivity in the two-dimensional Hubbard model

Phys. Rev. B **75**, 075110 (2007)

H. Yamase and W. Metzner

Competition of Fermi surface symmetry breaking, and superconductivity

Phys. Rev. B **75**, 155117 (2007)

H. Yamase and W. Metzner

Theory of the in-plane anisotropy of magnetic excitations in $\text{YBa}_2\text{Cu}_3\text{O}_{6+y}$

Physica C **460**, 979 (2007)

S. Andergassen, T. Enss, V. Meden, W. Metzner, U. Schollwöck, and K. Schönhammer

Renormalization group analysis of the one-dimensional extended Hubbard model with a single impurity

Phys. Rev. B **73**, 045125 (2006)

L. Dell'Anna and W. Metzner

Fermi surface fluctuations and single electron excitations near Pomeranchuk instability in two dimensions

Phys. Rev. B **73**, 045127 (2006)

R. Gersch, C. Honerkamp, D. Rohe, and W. Metzner

Fermionic renormalization group flow at all scales: breaking a discrete symmetry

AIP Conference Proceedings, **846**, 236 (2006)

W. Metzner

Functional renormalization group approach to correlated electron systems

AIP Conference Proceedings **846**, 130 (2006)

W. Metzner, J. Reiss, and D. Rohe

Magnetic and superconducting correlations in the two-dimensional Hubbard model

Phys. stat. sol. (b) **243**,46 (2006)

H. Yamase and W. Metzner

Magnetic excitations and their anisotropy in $\text{YBa}_2\text{Cu}_3\text{SO}_{6+x}$: slave-boson mean-field analysis of the bilayer t - J model

Phys. Rev. B **73**, 214517-1 (2006)

H. Yamase, V. Oganesyan and W. Metzner

Spontaneous Fermi surface symmetry breaking on a square lattice

Physica B **378-380**, 139-141 (2006)

S. Brener and W. Metzner

Semiclassical theory of electron drag in strong magnetic fields

JETP Letters **81**, 498 (2005)

List of publications W. Metzner

T. Enss, V. Meden, S. Andergassen, Barnabe-Theriault, W. Metzner, and K. Schönhammer
Impurity and correlation effects on transport in one-dimensional quantum wires
Phys. Rev. B **71**, 155401 (2005)

R. Gersch, C. Honerkamp, D. Rohe, and W. Metzner
Fermionic renormalization group flow into phases with broken discrete symmetry: charge-density wave model
Eur. Phys. J. B **48**, 349 (2005)

M. Kollar, M. Eckstein, K. Byczuk, N. Blümer, P. van Dongen, M.H. Radke de Cuba, W. Metzner, D. Tanaskovic, V. Dobrosavljevic, G. Kotliar, and D. Vollhardt
Green functions for nearest- and next-nearest-neighbor hopping on the Bethe lattice
Ann. Phys. (Leipzig) **14**, 642 (2005)

V. Meden, T. Enss, S. Andergassen, W. Metzner, and K. Schönhammer
Correlation effects on resonant tunneling in one-dimensional quantum wires
Phys. Rev. B **71**, 041302(R) (2005)

W. Metzner
Functional renormalization group computation of interacting Fermi systems
Prog. Theor. Phys. Suppl. **160**, 58 (2005)

D. Rohe and W. Metzner
Pseudogap at hot spots in the two-dimensional Hubbard model at weak coupling
Phys. Rev. B **71**, 115116 (2005)

H. Yamase, V. Oganesyan, and W. Metzner
Mean-field theory for symmetry-breaking Fermi surface deformations on a square lattice
Phys. Rev. B **72**, 035114 (2005)

S. Andergassen, T. Enss, V. Meden, W. Metzner, U. Schollwöck, and K. Schönhammer
Functional renormalization group for Luttinger liquids with impurities
Phys. Rev. B **70**, 075102 (2004)

M. Keller, W. Metzner, and U. Schollwöck
Pairing Transition in a Normal Fermi System with Attractive Interactions
in *Recent Trends in Theory of Physical Phenomena in High Magnetic Fields* ed. by I.D. Vagner et al. (Kluwer 2003), p. 47-59.

V. Meden, S. Andergassen, W. Metzner, U. Schollwöck, and K. Schönhammer
Scaling of the Conductance in a Quantum Wire
Europhys. Lett. **64**, 769-775 (2003)

Walter Metzner
Functional Renormalization Group for Interacting Fermi Systems
Ann. Henri Poincare **4**, 775-786 (2003)

List of publications W. Metzner

W. Metzner, D. Rohe, and S. Andergassen

Soft Fermi Surfaces and Breakdown of Fermi Liquid Behavior

Phys. Rev. Lett. **91**, 066402 (2003)

A. Neumayr and W. Metzner

Renormalized Perturbation Theory for Fermi Systems: Fermi Surface Deformation and Superconductivity in the Two-Dimensional Hubbard Model

Phys. Rev. B **67**, 035112 (2003)

M. Keller, W. Metzner, and U. Schollwöck

Dynamical Mean-Field Theory for the Normal Phase of the Attractive Hubbard Model

J. Low Temp. Phys. **126**, 961-977 (2002)

V. Meden, W. Metzner, U. Schollwöck, and K. Schönhammer

A Single Impurity in a Luttinger Liquid: How it Cuts the Chain

J. Low Temp. Phys. **126**, 1147-1163 (2002)

V. Meden, W. Metzner, U. Schollwöck, and K. Schönhammer

Scaling behavior of impurities in mesoscopic Luttinger liquids

Phys. Rev. B **65**, 045318 (2002)

U. Schollwöck, V. Meden, W. Metzner, and K. Schönhammer

DMRG Studies of Impurities in Luttinger Liquids

Prog. Theor. Phys. Suppl. **145**, 312 (2002)

M. Keller, W. Metzner, and U. Schollwöck

Dynamical Mean-Field Theory for Pairing and Spin Gap in the Attractive Hubbard Model

Phys. Rev. Lett. **86**, 4612-4615 (2001)

V. Meden, W. Metzner, U. Schollwöck, and K. Schönhammer

Inhomogeneous Luttinger Liquids: Power-Laws and Energy Scales

in *Open Problems in Strongly Correlated Electron Systems*

ed. by J. Bonca et al. (Kluwer 2001)

W. Metzner

Renormalization Group Analysis of a Two-Dimensional Interacting Electron System

(Proc. Second Conference on the Exact Renormalization Group, Rom, 2000)

Int. J. Mod. Phys. A **16**, 1889-1898 (2001)

Th. Pruschke, W. Metzner, and D. Vollhardt

On the Analyticity of Solutions in the Dynamical Mean-Field Theory

J. Phys.: Cond. Mat. **13**, 9455-9461 (2001)

D. Rohe and W. Metzner

Pair-Fluctuation-Induced Pseudogap in the Normal Phase of the Two-Dimensional Attractive Hubbard Model at Weak Coupling

Phys. Rev. B **63**, 224509 (2001)

List of publications W. Metzner

C.J. Halboth and W. Metzner

d-wave Superconductivity and Pomeranchuk Instability in the Two-Dimensional Hubbard Model

Phys. Rev. Lett. **85**, 5162-5165 (2000)

C.J. Halboth and W. Metzner

Renormalization group analysis of the 2D Hubbard model

Phys. Rev. B **61**, 7364-7377 (2000)

V. Meden, W. Metzner, U. Schollwöck, O. Schneider, T. Stauber, and K. Schönhammer

Luttinger Liquids with Boundaries: Power-Laws and Energy Scales

Eur. Phys. J. B **16**, 631-646 (2000)

W. Metzner

Superconductivity in the Two-Dimensional Hubbard Model

Found. Phys. **30**, 2101-2112 (2000)

K. Schönhammer, V. Meden, W. Metzner, U. Schollwöck, and O. Gunnarsson

Boundary effects on one-particle spectra of Luttinger liquids

Phys. Rev. B **61**, 4393-4396 (2000)

M. Keller, W. Metzner, and U. Schollwöck

Thermodynamics of a superconductor with strongly bound Cooper pairs

Phys. Rev. B **60**, 3499-3507 (1999)

A. Neumayr and W. Metzner

Reduction formula for fermion loops and density correlations of the 1D Fermi gas

J. Stat. Phys. **96**, 613-626 (1999)

C.J. Halboth and W. Metzner

Spectral function of two-dimensional Fermi liquids

Phys. Rev. B **57**, 8873-8877 (1998)

W. Metzner, C. Castellani, and C. Di Castro

Fermi systems with strong forward scattering

Adv. Phys. **47**, 317-445 (1998)

A. Neumayr and W. Metzner

Fermion loops, loop cancellation and density correlations in two-dimensional Fermi systems

Phys. Rev. B **58**, 15449-15459 (1998)

C.J. Halboth and W. Metzner

Fermi surface of the 2D Hubbard model at weak coupling

Z. Phys. B **102**, 501-504 (1997)

W. Metzner, C. Castellani

2-particle correlations and orthogonality catastrophe in interacting Fermi systems

Int. J. Mod. Phys. B **9**, 1959 (1995)

List of publications W. Metzner

W. Metzner

Normal metallic states of interacting electrons – Luttinger liquid versus Fermi-liquid
Physica B **197**, 457 (1994)

C. Castellani, C. Di Castro, W. Metzner

Dimensional crossover from Fermi to Luttinger liquid
Phys. Rev. Lett. **72**, 316 (1994)

W. Metzner, C. Di Castro

Conservation-laws and correlation-functions in the Luttinger liquid
Phys. Rev. B **47**, 16107 (1993)

C. Castellani, C. Di Castro, W. Metzner

Instabilities of anisotropic interacting Fermi systems
Phys. Rev. Lett. **69**, 1703 (1992)

W. Metzner, P. Schmit, D. Vollhardt

Hole dynamics in a spin background – a sum-rule-conserving theory with exact limits
Phys. Rev. B **45**, 2237 (1992)

C. Di Castro, W. Metzner

Ward identities and the beta-function in the Luttinger liquid
Phys. Rev. Lett. **67**, 3852 (1991)

W. Metzner

Linked-cluster expansion around the atomic limit of the Hubbard-model
Phys. Rev. B **43**, 8549 (1991)

W. Metzner

Analytic evaluation of resonating valence bond states
Z. Phys. B-Cond. Mat. **82**, 183 (1991)

W. Metzner

Hubbard-model in high dimensions – a perturbation expansion about the atomic limit
Physica B **165**, 403 (1990)

D. Vollhardt, P. G. J. van Dongen, F. Gebhard, W. Metzner

Gutzwiller-type wave functions for correlated fermions
Mod. Phys. Lett. B **4**, 499 (1990)

W. Metzner, D. Vollhardt

Correlated lattice fermions in high dimensions
Helv. Phys. Acta **63**, 364 (1990)

W. Metzner, D. Vollhardt

Ground-state energy of the $d = 1,2,3$ dimensional Hubbard-model in the weak-coupling limit
Phys. Rev. B **39**, 4462 (1989)

List of publications W. Metzner

W. Metzner, D. Vollhardt

Correlated lattice fermions in d =infinity demensions

Phys. Rev. Lett. **62**, 324 (1989)

W. Metzner, D. Vollhardt

The Hubbard model in infinite dimensions

Conference Proceedings: Interacting Electrons in Reduced Dimensions, Turin, Italy 129 (1989)

W. Metzner

Variational theory for correlated lattice fermions in high demensions

Z. Phys. B-Cond. Matt. **77**, 253 (1989)

W. Metzner, D. Vollhardt

Analytic calculation of ground-state properties of correlated fermions with the Gutzwiller wave-function

Phys. Rev. B **37**, 7382 (1988)

W. Metzner, D. Vollhardt

Ground-state properties of correlated fermions – exact analytic results for the Gutzwiller wave-function

Phys. Rev. Lett. **59**, 121 (1987)

W. Metzner, D. Vollhardt

Analytical calculation of momentum distributions and ground-state energies of correlated fermions with Gutzwiller wave-function

Conference Proceedings: 18th Intern. Conf. on Low Temperature Physics, Kyoto, Japan, JJAP **26**, 479 (1987)