Curriculum vitae

Personal Information

FIRST NAME / SURNAME Giorgio Sangiovanni

PERMANENT ADDRESS Universität Würzburg
Institut für Theoretische Physik und Astrophysik
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TEL. & EMAIL +49 (0)931 31 89100 – sangiovanni@physik.uni-wuerzburg.de

WEB https://www.physik.uni-wuerzburg.de/sangiovanni

NATIONALITY Italian

DATE OF BIRTH 2.8.1976

MARITAL STATUS Married; one daughter

Employment

DATES March 2012 - present
POSITION Professor of Theoretical Physics (W2/associate)
INSTITUTION Julius-Maximilians-Universität Würzburg

DATES September 2008 - February 2012
POSITION University assistant
INSTITUTION Institut für Festkörperphysik – TU Wien

DATES December 2004 - August 2008
POSITION Post-doc grant
INSTITUTION Max-Planck Institut für Festkörperforschung Stuttgart

Education

PHD IN PHYSICS 2005 – Università "La Sapienza", Rome – M. Capone and C. Castellani
"LAUREA" IN PHYSICS 2001 – Università "La Sapienza", Rome – C. Castellani
HIGH-SCHOOL LEAVING EXAM 1995 – "Maturità" – Liceo scientifico "L. Pasteur", Rome
MUSIC 1994 – French Horn Diploma – Conservatorio "S. Cecilia", Rome

Curriculum vitae

Competitions, shortlists and other achievements

DATE	July 2011
INSTITUTION	Julius-Maximilians-Universität Würzburg
POSITION	W2/associate Professorship in theoretical physics
RESULT	1st in the shortlist and offer ("Ruf")
HABILITATION AS ITALIAN PROFESSOR	2017 – In the category of Full Professor of Theoretical Condensed Matter Physics
	2012 – In the category of Associate Professor of Theoretical Condensed Matter Physics
PHD ENTRANCE COMPETITIONS	2001 – SISSA (Trieste) – short-listed, offer declined
	2001 – Università "La Sapienza", Rome – short-listed, offer accepted

Mid-/long-term visits

PERIOD	2019 Jan-Feb
INSTITUTION/PROGRAM	SIMONS FOUNDATION – CCQ, Flatiron Institute, New York, USA
PERIOD	2010 Aug-Sep
INSTITUTION/PROGRAM	RIKEN, Japan – *Quantum Science of Strongly Correlated Systems* – Y. Tokura, N. Nagaosa and R. Arita
PERIOD	2010 Feb-Mar
INSTITUTION/PROGRAM	UCSB-KIPT, USA – *Towards Material Design Using Strongly Correlated Electron Systems* – A. Georges, G. Kotliar and S. Savrasov
PERIOD	2005-2008
INSTITUTION/PROGRAM	Forschungszentrum Jülich – frequent guest of E. Koch and S. Blügel

Curriculum vitae

Research interests

- Theory of interacting electron systems
- Topological states of matter
- Realistic calculations of materials
- Quantum magnetism
- Computational methods for strongly correlated fermions
- Electron-phonon interaction and high-T_c superconductors

Publication record

~100 publications in international journals
25 PRL, 1 Nature, 1 Science, 4 Nature Commun., 2 Nano Letters, 2 PRX, 2 npj Quantum Materials, >50 PRB (see further down for a complete list)
h-index: 42 (**Google Scholar**), 36 (ISI Web-of-Science)

Invited talks and seminars

~40 invited talks in international conferences and invited seminars
(see further down for a detailed list)

Third-party funding

DFG – EXC 2147 One of the funding principal investigators of ***ct.qmat*** Dresden/Würzburg cluster *"Complexity and Topology in Quantum Matter"* – length: 7 years

DFG – SFB 1170 Principal investigator of two Projects in the SFB *"Topological and Correlated Electronics at Surfaces and Interfaces"* – length/budget: 8 years/760 k€

DFG – FOR 1346 Principal investigator for Project *"Realistic theory of electronic correlations in nanoscopic systems"* – length/budget: 3 years/136 k€

DFG – FOR 1162 Principal investigator for Project *"Orbital, spin and charge fluctuations in layered oxide heterostructures"* – length/budget: 3 years/237 k€

TU WIEN Principal investigator for the "Innovative Projekte", *"Correlated heterostructures for solar cells"* – 3 years/position for 1 PhD student

FWF *"Lise Meitner"* fellowship M1136, project title *"At the frontiers of phonons and correlated electrons"* – 2 years/143 k€

Organization of conferences

DATE/VENUE 2020 (posponed to 2022) Amalfi (Italy)
DESCRIPTION 2. edition of the international conference "***Lectiones Amalfitanæ***" on electronic correlations and quantum materials
OTHER ORGANIZERS A. Toschi, M. Cuoco and A. Georges

DATE/VENUE 2018 Campello sul Clitunno (Italy)
DESCRIPTION 1. edition of the international conference "***Lectiones Clitumnaliæ***" on electronic correlations,
OTHER ORGANIZERS S. Andergassen and A. Toschi

DATE/VENUE 2018 Würzburg
DESCRIPTION International Conference "***ToCoTronics2018***" of the SFB 1170
OTHER ORGANIZERS R. Claessen, B. Trauzettel, J. Schäfer, T. Kießling and V. Hinkov

DATE/VENUE 2014 Haikou (China)
DESCRIPTION Symposium H1 at the International Conference *"Second International Conference of Young Researchers on Advanced Materials"* IUMRS-ICYRAM
OTHER ORGANIZERS X.-Q. Chen, C. Franchini, G. Profeta, A. Kolmogorov and R. Zhang

DATE/VENUE 2014 Nice (France)
DESCRIPTION International Conference *"The New Generation in Strongly Correlated Electron Systems"* NGSCES 2014
OTHER ORGANIZERS N. Bergeal, S. Kaiser and M. Schirò

Curriculum vitae

Academic activities

@UNI WÜRZBURG

Program Head of Physics Master and Bachelor (Fakultät für Physik und Astronomie, University of Würzburg)

Coordinator of the exchange program *"Amerikaprogramm für Studierende der Physik"* with four universities in the USA for the Fakultät für Physik and Astronomie of the University of Würzburg. Fundings applied to the DAAD.

Vorsitzender (=speaker) of the Kommission für das Auslandsstudium
Member of the Fakultätsrat (Fakultät für Physik und Astronomie, University of Würzburg)

Host of a *"Humboldt Research Fellowship for Postdoctoral Researchers"* Grant (Dr. Zhicheng Zhong, 2015), funded by the A. von Humboldt Stiftung

Teaching

@UNI WÜRZBURG

- "Quantenmechanik I"
- "Quantenmechanik II"
- "Quantenmechanik III"
- "Mathematische Grundlagen der Quantenmechanik"
- "Computational Physics" for Bachelor Students
- "Theorie der Supraleitung"
- "Theoretische Festkörperphysik II"
- "Computational Materials Science"
- Oberseminar "Fortgeschrittene Themen der Theoretischen Physik"
- Oberseminar "Quantum Matter: Theorie und Experiment"
- Oberseminar "Symmetrien in der Festkörperphysik"

@TU WIEN

- lecturer of "Quantentheorie I"
- Übungen zur "Quantenfeldtheorie für Vielteilchensysteme"
- lecturer of "Computational Materials Science"
- lecturer of "Quantum Computing and Quantum Dots"
- lecturer of "Computational Materials Science"
- "Quantentheorie II Übungen"
- "Laborübungen II"

Curriculum vitae

Supervision of students

PHD P. Eck, A. Hausoel, M. Edelmann, A. Kowalski, S. Adler, N. Wagner, N. Parragh M. Wallerberger, E. Assmann, A. Valli, C. Taranto

MASTER N. Wagner, P. Eck, A. Hausoel, M. Edelmann, A. Kowalski, S. Enzner, M. Veit P. Gunacker, C. Ecker, D. Rotter, S. Hummel, N. Parragh

BACHELOR/PROJECT S. Enzner, A. Bakic, N. Wagner, A. Kowalski, S. Körber, L. Gradl S. Wolf, V. Motsch, D. Rotter, A. Girschik, C. Ecker, N. Parragh

Activity as Referee

Physical Review Letters – Physical Review B – Nature Communications – Nature Materials – Scientific Reports – ACS Nano – ERC (European Research Council) – Deutsche Forschungsgemeinschaft (DFG) – Alexander von Humboldt Stiftung

Five selected papers

PRL 126, 206601 (2021)
[**APS**, **ARXIV**]
N. Wagner, S. Ciuchi, A. Toschi, B. Trauzettel and G. Sangiovanni
Resistivity Exponents in 3D-Dirac Semimetals From Electron-Electron Interaction
SHORT DESCRIPTION We find new temperature laws of transport in Dirac liquids and show how the low-energy bandstructure protection breaks down at strong coupling.

NAT. COMMUN. 12, 5396 (2021)
[**NATURE**, **ARXIV**]
M. Bauernfeind, J. Erhardt, P. Eck, P. K. Thakur, J. Gabel, T.-N. Lee, J. Schäfer, S. Moser, D. Di Sante, R. Claessen and G. Sangiovanni
Design and realization of topological Dirac fermions on a triangular lattice
SHORT DESCRIPTION We conceive, design and realize a large-gap Kane-Mele–like quantum spin Hall system on a triangular lattice. Our discovery demonstrates how relativistic fermions can inherit their symmetry properties from parent structures but physically localize on emergent real-space positions, namely the honeycomb-arranged voids of the triangular unit cell.

NAT. COMMUN. 8, 16062 (2017)
[**NATURE**, **ARXIV**]
A. Hausoel, M. Karolak, E. Şaşıoğlu, A. Lichtenstein, K. Held, A. Katanin, A. Toschi and G. Sangiovanni
Local magnetic moments in iron and nickel at ambient and Earth's core conditions
SHORT DESCRIPTION A missing piece of the puzzle of the Earth's magnetic field: nickel-iron alloys display an unexpected non-Fermi liquid behaviour at extreme conditions.

PRL 114, 185701 (2015)
[**APS**, **ARXIV**]
A. Amaricci, J. C. Budich, M. Capone, B. Trauzettel and G. Sangiovanni
First-order character and observable signatures of topological quantum phase transitions
SHORT DESCRIPTION A discontinuous topological transition is identified for the first time in a microscopic model as an effect of the electronic interaction treated beyond the Hartree level.

PRL 110, 078701 (2013)
[**APS**, **ARXIV**]
E. Assmann, P. Blaha, R. Laskowski, K. Held, S. Okamoto and G. Sangiovanni
Oxide heterostructures for efficient solar cells
SHORT DESCRIPTION Prediction of novel solar cells with higher efficiency, based on layered oxide heterostructures. This paper has been selected for a Synopsis in Physics.

Full publication list

118. L. Crippa, J. Budich and G. Sangiovanni
Phys. Rev. B **104**, L121109 (2021) [**APS**, **ARXIV**]
Fourth-Order Exceptional Points in Correlated Quantum Many-Body Systems

117. X. Wu, T. Schwemmer, T. Müller, A. Consiglio, G. Sangiovanni, D. Di Sante, Y. Iqbal, W. Hanke, A. Schnyder, M. Denner, M. Fischer, T. Neupert and R. Thomale
Phys. Rev. Lett. (2021) *in press* [**ARXIV**]
Nature of unconventional pairing in the kagome superconductors AV_3Sb_5

116. M. Bauernfeind, J. Erhardt, P. Eck, P. K. Thakur, J. Gabel, T.-N. Lee, J. Schäfer, S. Moser, D. Di Sante, R. Claessen and G. Sangiovanni
Nat. Commun. **12**, 5396 (2021) [**NATURE**, **ARXIV**]
Design and realization of topological Dirac fermions on a triangular lattice

115. N. Wagner, S. Ciuchi, A. Toschi, B. Trauzettel and G. Sangiovanni
Phys. Rev. Lett. **126**, 206601 (2021) [**APS**, **ARXIV**]
Resistivity Exponents in 3D-Dirac Semimetals From Electron-Electron Interaction

114. M. Ünzelmann, H. Bentmann, T. Figgemeier, P. Eck, J. N. Neu, B. Geldiyev, F. Diekmann, S. Rohlf, J. Buck, M. Hoesch, M. Kalläne, K. Rossnagel, R. Thomale, T. Siegrist, G. Sangiovanni, D. Di Sante, F. Reinert
Nat. Commun. **12**, 3650 (2021) [**NATURE**, **ARXIV**]
Momentum-space signatures of Berry flux monopoles in a Weyl semimetal

113. A. Odobesko, D. Di Sante, A. Kowalski, S. Wilfert, F. Friedrich, R. Thomale, G. Sangiovanni and M. Bode
Phys. Rev. B **102**, 174504 (2020) [**APS**, **ARXIV**]
Observation of tunable single-atom Yu-Shiba-Rusinov states

112. M. Reitner, P. Chalupa, L. Del Re, D. Springer, S. Ciuchi, G. Sangiovanni and A. Toschi
Phys. Rev. Lett. **125**, 196403 (2020) [**APS**, **ARXIV**]
Attractive Effect of a Strong Electronic Repulsion: The Physics of Vertex Divergences

111. J. M. Pizarro, S. Adler, K. Zantout, T. Mertz, P. Barone, R. Valentí, G. Sangiovanni and T. Wehling
npj Quantum Mater. **5**, 79 (2020) [**NATURE**]
Deconfinement of Mott localized electrons into topological and spin–orbit-coupled Dirac fermions

110. A. Valli, M. P. Bahlke, A. Kowalski, M. Karolak, C. Hermann and G. Sangiovanni
Phys. Rev. Research **2**, 033432 (2020) [**APS**, **ARXIV**]
Kondo screening in Co adatoms with full Coulomb interaction

109. P. Schütz, M. Kamp, D. Di Sante, A. Lubk, B. Büchner, G. Sangiovanni, M. Sing and R. Claessen
Appl. Phys. Lett. **116**, 201601 (2020) [**AIP**]
Electronic structure of epitaxial perovskite films in the two-dimensional limit: Role of the surface termination

108. D. Springer, B. Kim, P. Liu, S. Khmelevskyi, S. Adler, M. Capone, G. Sangiovanni, C. Franchini and A. Toschi
Phys. Rev. Lett. **125**, 166402 (2020) [**APS**, **ARXIV**]
Osmates on the Verge of a Hund's-Mott Transition: The Different Fates of $NaOsO_3$ and $LiOsO_3$

107. C. Watzenböck, M. Edelmann, D. Springer, G. Sangiovanni and A. Toschi
Phys. Rev. Lett. **125**, 086402 (2020) [**APS**, **ARXIV**]
Characteristic Timescales of the Local Moment Dynamics in Hund's Metals

106. D. Springer, P. Chalupa, S. Ciuchi, G. Sangiovanni and A. Toschi
Phys. Rev. B **101**, 155148 (2020) [**APS**, **ARXIV**]
Interplay between local response and vertex divergences in many-fermion systems with on-site attraction

105. N. Néel, J. Kröger, M. Schüler, B. Shao, T. Wehling, A. Kowalski and G. Sangiovanni
Phys. Rev. Research **2**, 023309 (2020) [**APS**, **ARXIV**]
Single-Co Kondo effect in atomic Cu wires on Cu(111)

104. M. Fuchs, P. Liu, T. Schwemmer, G. Sangiovanni, R. Thomale, C. Franchini and D. Di Sante
J. Phys. Mater. **3**, 025001 (2020) [**IOP**]
Kagome metal-organic frameworks as a platform for strongly correlated electrons

103. M. Ünzelmann, H. Bentmann, P. Eck, T. Kißlinger, B. Geldiyev, J. Rieger, S. Moser, R. C. Vidal, K. Kißner, L. Hammer, M. A. Schneider, T. Fauster, G. Sangiovanni, D. Di Sante and F. Reinert
Phys. Rev. Lett. **124**, 176401 (2020) [**APS**, **ARXIV**]
Orbital-Driven Rashba Effect in a Binary Honeycomb Monolayer AgTe

102. L. Crippa, A. Amaricci, N. Wagner, G. Sangiovanni, J. C. Budich and M. Capone
Phys. Rev. Research **2**, 012023(R) (2020) [**APS**, **ARXIV**]
Nonlocal annihilation of Weyl fermions in correlated systems

101. D. Mahler, J.-B. Mayer, P. Leubner, L. Lunczer, D. Di Sante, G. Sangiovanni, R. Thomale, E. Hankiewicz, H. Buhmann, C. Gould and L. W. Molenkamp
Phys. Rev. X **9**, 031034 (2019) [**APS**, **ARXIV**]
Interplay of Dirac Nodes and Volkov-Pankratov Surface States in Compressively Strained HgTe

100. J. Kaufmann, P. Gunacker, A. Kowalski, G. Sangiovanni and K. Held
Phys. Rev. B **100**, 075119 (2019) [**APS**, **ARXIV**]
Symmetric improved estimators for continuous-time quantum Monte Carlo

99. S. Großmann, D. Friedrich, M. Karolak, R. Kullock, E. Krauss, M. Emmerling, G. Sangiovanni and B. Hecht
Phys. Rev. Lett. **122**, 246802 (2019) [**APS**, **ARXIV**]
Nonclassical Optical Properties of Mesoscopic Gold

98. A. Kowalski, A. Hausoel, M. Wallerberger, P. Gunacker and G. Sangiovanni
Phys. Rev. B **99**, 155112 (2019) [**APS**, **ARXIV**]
State and superstate sampling in hybridization-expansion continuous-time quantum Monte Carlo

97. C.-H. Min, H. Bentmann, J. N. Neu, P. Eck, S. Moser, T. Figgemeier, M. Ünzelmann, K. Kissner, P. Lutz, R. J. Koch, C. Jozwiak, A. Bostwick, E. Rotenberg, R. Thomale, G. Sangiovanni, T. Siegrist, D. Di Sante and F. Reinert
Phys. Rev. Lett. **122**, 116402 (2019) [**APS**, **ARXIV**]
Orbital Fingerprint of Topological Fermi Arcs in the Weyl Semimetal TaP

96. P. Kumar Das, D. Di Sante, F. Cilento, C. Bigi, D. Kopic, D. Soranzio, A. Sterzi, J. A. Krieger, I. Vobornik, J. Fujii, T. Okuda, V. Strocov, M. B. H. Breese, F. Parmigiani, G. Rossi, S. Picozzi, R. Thomale, G. Sangiovanni, R. J. Cava and G. Panaccione
Electron. Struct. **1**, 014003 (2019) [**IOP**, **ARXIV**]
Electronic properties of candidate type-II Weyl semimetal WTe_2. A review perspective

95. S. Ok, L. Muechler, D. Di Sante, G. Sangiovanni, R. Thomale and T. Neupert
Phys. Rev. B **99**, 121105(R) (2019) [**APS**, **ARXIV**]
Custodial glide symmetry of quantum spin Hall edge modes in monolayer WTe_2

94. S. Barbarino, G. Sangiovanni, and J. C. Budich
Phys. Rev. B **99**, 075158 (2019) *First-order topological quantum phase transition in a strongly correlated ladder*
[**APS**, **ARXIV**]

93. D. Di Sante, P. Eck, M. Bauernfeind, M. Will, R. Thomale, J. Schäfer, R. Claessen and G. Sangiovanni
Phys. Rev. B **99**, 035145 (2019) *Towards topological quasifreestanding stanene via substrate engineering*
[**APS**, **ARXIV**]

92. M. Wallerberger, A. Hausoel, P. Gunacker, A. Kowalski, N. Parragh, F. Goth, K. Held and G. Sangiovanni
Comput. Phys. Comm. **235**, 388-399 (2019) [**ELSEVIER**, **ARXIV**] *w2dynamics: Local one- and two-particle quantities from dynamical mean field theory*

91. J. Kügel, M. Karolak, A. Krönlein, D. Serrate, M. Bode and G. Sangiovanni
npj Quantum Mater. **3**, 53 (2018) *Reversible magnetic switching of high-spin molecules on a giant Rashba surface*
[**NATURE**]

90. A. Amaricci, A. Valli, G. Sangiovanni, B. Trauzettel and M. Capone
Phys. Rev. B **98**, 045133 (2018) *Coexistence of metallic edge states and antiferromagnetic ordering in correlated topological insulators*
[**APS**, **ARXIV**]

89. E. Kamil, J. Berges, G. Schönhoff, M. Rösner, M. Schüler, G. Sangiovanni and T. Wehling
J. Phys.: Condens. Matter. **30**, 235601 (2018) *Electronic structure of single layer 1T-$NbSe_2$: interplay of lattice distortions, non-local exchange, and Mott–Hubbard correlations*
[**IOP**, **ARXIV**]

88. O. Gunnarsson, J. Merino, T. Schäfer, G. Sangiovanni, G. Rohringer and A. Toschi
Phys. Rev. B **97**, 125134 (2018) *Complementary views on electron spectra: From fluctuation diagnostics to real-space correlations*
[**APS**, **ARXIV**]

87. O. Janson, Z. Zhong, G. Sangiovanni and K. Held
Print ISBN: 978-3-319-74988-4 *Dynamical Mean Field Theory for Oxide Heterostructure's*
Electronic ISBN: 978-3-319-74989-1 Chapter in Book Spectroscopy of Complex Oxide Interfaces
[**SPRINGER**, **ARXIV**] Springer International Publishing (2018)

86. P. Schütz, D. Di Sante, L. Dudy, J. Gabel, M. Stübinger, M. Kamp, Y. Huang, M. Capone, M.-A. Husanu, V. Strocov, G. Sangiovanni, M. Sing and R. Claessen
Dimensionality-driven metal-insulator-transition in spin-orbit coupled $SrIrO_3$
Phys. Rev. Lett. **119**, 256404 (2017)
[**APS**, **ARXIV**]

85. F. Bisti, V. Rogalev, M. Karolak, S. Paul, A. Gupta, T. Schmitt, G. Güntherodt, V. Eyert, G. Sangiovanni, G. Profeta and V. Strocov
Weakly-correlated nature of ferromagnetism in non-symmorphic CrO_2 revealed by bulk-sensitive soft-X-ray ARPES
Phys. Rev. X **7**, 041067 (2017)
[**APS**, **ARXIV**]

84. A. Hariki, A. Hausoel, G. Sangiovanni and J. Kuneš
DFT+DMFT study on soft moment magnetism and covalent bonding in $SrRu_2O_6$
Phys. Rev. B **96**, 155135 (2017)
[**APS**, **ARXIV**]

83. D. Di Sante, A. Hausoel, P. Barone, J. Tomczak, G. Sangiovanni and R. Thomale
Realizing double Dirac particles in the presence of electronic interactions
Phys. Rev. B **96**, 121106(R) (2017)
[**APS**, **ARXIV**]

82. O. Gunnarsson, G. Rohringer, T. Schäfer, G. Sangiovanni, and A. Toschi
Breakdown of traditional many-body theories for correlated electrons
Phys. Rev. Lett. **119**, 056402 (2017)
[**APS**, **ARXIV**]

81. D. Di Sante, P. Kumar Das, C. Bigi, Z. Ergönenc, N. Gürtler, J. Krieger, T. Schmitt, M. Ali, G. Rossi, R. Thomale, C. Franchini, S. Picozzi, J. Fujii, V. Strocov, G. Sangiovanni, I. Vobornik, R. J. Cava, and G. Panaccione
Three-dimensional electronic structure of type-II Weyl semimetal WTe_2
Phys. Rev. Lett. **119**, 026403 (2017)
[**APS**, **ARXIV**]

80. A. Hausoel, M. Karolak, E. Şaşıoğlu, A. Lichtenstein, K. Held, A. Katanin, A. Toschi and G. Sangiovanni
Local magnetic moments in iron and nickel at ambient and Earth's core conditions
Nat. Commun. **8**, 16062 (2017)
[**NATURE**, **ARXIV**]

79. M. Schüler, S. Barthel, T. Wehling, M. Karolak, A. Valli and G. Sangiovanni
Realistic theory of electronic correlations in nanoscopic systems
Eur. Phys. J Special Topics **226**, 2615-2640 (2017)
[**EPJST**]

78. A. Amaricci, L. Privitera, F. Petocchi, M. Capone, G. Sangiovanni and B. Trauzettel
Phys. Rev. B **95**, 205120 (2017) *Edge state reconstruction from strong correlations in quantum spin Hall insulators*
[**APS**, **ARXIV**]

77. M. Edelmann, G. Sangiovanni, M. Capone and L. de' Medici
Phys. Rev. B **95**, 205118 (2017) *Chromium analogs of iron-based superconductors*
[**APS**, **ARXIV**]

76. Z. Wang, Z. Zhong, S. McKeown Walker, Z. Ristic, J.-Z. Ma, F. Y. Bruno, S. Riccò, G. Sangiovanni, G. Eres, N. C. Plumb, L. Patthey, M. Shi, J. Mesot, F. Baumberger and M. Radovic
Nano Letters **17**, 2561 (2017) *Atomically Precise Lateral Modulation of a Two-Dimensional Electron Liquid in Anatase TiO_2 Thin Films*
[**ACS**, **ARXIV**]

75. P. Sessi, D. Di Sante, A. Szczerbakow, F. Glott, S. Wilfert, H. Schmidt, T. Bathon, P. Dziawa, M. Greiter, T. Neupert, G. Sangiovanni, T. Story, R. Thomale and M. Bode
Science **354**, 1269 (2016) *Robust spin-polarized midgap states at step edges of topological crystalline insulators*
[**SCIENCE**]

74. T. Schäfer, S. Ciuchi, M. Wallerberger, P. Thunström, O. Gunnarsson, G. Sangiovanni, G. Rohringer and A. Toschi
Phys. Rev. B **94**, 235108 (2016) *Nonperturbative landscape of the Mott-Hubbard transition: Multiple divergence lines around the critical endpoint*
[**APS**, **ARXIV**]

73. P. Gunacker, M. Wallerberger, T. Ribic, A. Hausoel, G. Sangiovanni and K. Held
Phys. Rev. B **94**, 125153 (2016) *Worm-improved estimators in continuous-time quantum Monte Carlo*
[**APS**, **ARXIV**]

72. A. Amaricci, J. C. Budich, M. Capone, B. Trauzettel and G. Sangiovanni
Phys. Rev. B **93**, 235112 (2016) *Strong correlation effects on topological quantum phase transitions in three dimensions*
[**APS**, **ARXIV**]

71. O. Gunnarsson, T. Schäfer, J. P. F. LeBlanc, J. Merino, G. Sangiovanni, G. Rohringer and A. Toschi
Phys. Rev. B **93**, 245102 (2016) *Parquet decomposition calculations of the electronic self-energy*
[**APS**, **ARXIV**]

70. M. Schüler, S. Barthel, M. Karolak, A. I. Poteryaev, A. I. Lichtenstein, M. I. Katsnelson, G. Sangiovanni and T. Wehling
Phys. Rev. B **93**, 195115 (2016) *Many-body effects on Cr(001) surfaces: An LDA+DMFT study*
[**APS**, **ARXIV**]

69. G. Li, W. Hanke, G. Sangiovanni and B. Trauzettel
Phys. Rev. B **92**, 235149 (2015) *Interacting weak topological insulators and their transition to Dirac semimetal phases*
[**APS**, **ARXIV**]

68. A. Galler, C. Taranto, M. Wallerberger, M. Kaltak, G. Kresse, G. Sangiovanni, A. Toschi and K. Held
Phys. Rev. B **92**, 205132 (2015) *Screened moments and absence of ferromagnetism in FeAl*
[**APS**, **ARXIV**]

67. P. Gunacker, M. Wallerberger, E. Gull, A. Hausoel, G. Sangiovanni and K. Held
Phys. Rev. B **92**, 115102 (2015) *Continuous-time quantum Monte Carlo using worm sampling*
[**APS**, **ARXIV**]

66. A. Valli, H. Das, G. Sangiovanni, T. Saha-Dasgupta and K. Held
Phys. Rev. B **92**, 115143 (2015) *Tunable site- and orbital-selective Mott transition and quantum confinement effects in $La_{0.5}Ca_{0.5}MnO_3$ nanoclusters*
[**APS**, **ARXIV**]

65. J. Kügel, M. Karolak, A. Krönlein, J. Senkpiel, P.-J. Hsu, G. Sangiovanni, and M. Bode
Phys. Rev. B **91**, 235130 (2015) *State identification and tunable Kondo effect on MnPc on Ag(001)*
[**APS**]

64. Z. Zhong, M. Wallerberger, J. Tomczak, C. Taranto, N. Parragh, A. Toschi, G. Sangiovanni and K. Held
Phys. Rev. Lett. **114**, 246401 (2015) *Electronics with correlated oxides: $SrVO_3/SrTiO_3$ as a Mott transistor*
[**APS**, **ARXIV**]

63. O. Gunnarsson, T. Schäfer, J. P. F. LeBlanc, E. Gull, J. Merino, G. Sangiovanni, G. Rohringer and A. Toschi
Phys. Rev. Lett. **114**, 236402 (2015) *Fluctuation diagnostics of the electron self-energy: Origin of the pseudogap physics*
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62. A. Amaricci, J. C. Budich, M. Capone, B. Trauzettel and G. Sangiovanni
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61. A. Valli, T. Schäfer, P. Thunström, G. Rohringer, S. Andergassen, G. Sangiovanni, K. Held and A. Toschi
Phys. Rev. B **91**, 115115 (2015) *Dynamical vertex approximation in its parquet implementation: Application to Hubbard nano-rings*
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Phys. Rev. B **91**, 075108 (2015) *Nickel-titanium double perovskite: A three-dimensional spin-1 Heisenberg antiferromagnet*
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EPL **108**, 57004 (2014) *Bands, resonances, edge singularities and excitons in core level spectroscopy investigated within the dynamical mean-field theory* – Editor's choice
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58. C. Seibel, A. Nuber, H. Bentmann, M. Mulazzi, P. Blaha, G. Sangiovanni and F. Reinert
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Nano Letters **14**, 3895 (2014) *Relevance of hybridization and filling of 3d orbitals for the Kondo effect in transition metal Phthalocyanines*
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New J. Phys. **16**, 033009 (2014) *Importance of d-p Coulomb interaction for high T_C cuprates and other oxides*
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51. J. C. Budich, B. Trauzettel and G. Sangiovanni
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Fluctuation-driven topological Hund insulators

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49. P. Hansmann, A. Toschi, G. Sangiovanni, T. Saha-Dasgupta, S. Lupi, M. Marsi and K. Held
Phys. Status Solidi B **250**, 1251 (2013)
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Mott–Hubbard transition in V_2O_3 revisited

48. D. Rotter, A. Valli, G. Sangiovanni, K. Held
Eur. Phys. J. B **86**, 68 (2013)
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47. N. Parragh, A. Toschi, K. Held and G. Sangiovanni
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Conserved quantities of SU(2)-invariant interactions for correlated fermions and the advantages for quantum Monte Carlo simulations

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Phys. Rev. B **84**, 100505(R) (2011) [**APS**, **ARXIV**]

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Phys. Rev. B **84**, 085129 (2011) [**APS**, **ARXIV**]

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Phys. Rev. B **82**, 233104 (2010) [**APS**, **ARXIV**]

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Low-energy kink in the nodal dispersion of copper oxide superconductors: Insights from dynamical mean-field theory
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A microscopic view on the Mott transition in chromium-doped V_2O_3
Nat. Commun. **1**, 105 (2010) [**NATURE**, **ARXIV**]

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Analytical continuation of imaginary axis data for optical conductivity
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Phys. Rev. Lett. **105**, 077002 (2010) *High-temperature optical spectral weight and Fermi-liquid renormalization in Bi-based cuprate superconductors*
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27. A. Valli, G. Sangiovanni, O. Gunnarsson, A. Toschi and K. Held
Phys. Rev. Lett. **104**, 246402 (2010) *Dynamical vertex approximation for nanoscopic systems*
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Phys. Rev. Lett. **104**, 197002 (2010) *Dichotomy between large local and small ordered magnetic moments in Iron-based superconductors*
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Phys. Rev. B **81**, 155107 (2010) *Analytic continuation of imaginary axis data using maximum entropy*
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Phys. Rev. Lett. **104**, 047401 (2010) *Inequivalent routes across the Mott transition in V_2O_3 explored by X-ray absorption*
[**APS**, **ARXIV**]

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J. of Electron Spectroscopy and Related Phenomena **181**, 20 (2010) *Why standard estimates of electron-phonon coupling in cuprates do not work*
[**ELSEVIR**]

22. A. Perucchi, C. Marini, M. Valentini, P. Postorino, R. Sopracase, P. Dore, P. Hansmann, O. Jepsen, G. Sangiovanni, A. Toschi, K. Held, D. Topwal, D. D. Sarma and S. Lupi
Phys. Rev. B **80**, 073101 (2009) *Pressure and alloying effects on the metal to insulator transition in $NiS_{2-x}Se_x$ studied by infrared spectroscopy*
[**APS**, **ARXIV**]

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J. Phys.: Conf. Ser. **200**, 012208 (2009) [**IOP**]
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20. F. Rodolakis, P. Hansmann, J.-P. Rueff, A. Toschi, M. W. Haverkort, G. Sangiovanni, K. Held, M. Sikora, A. Congeduti , J.-P. Itié, F. Baudelet , P. Metcalf and M. Marsi
J. Phys.: Conf. Ser. **190**, 012092 (2009) [**IOP**]
Electronic correlations in V_2O_3 studied with K-edge X-ray absorption spectroscopy

19. D. Reznik, G. Sangiovanni, O. Gunnarsson and T. P. Devereaux
Nature **455**, E6 (2008) [**NATURE**, **ARXIV**]
Photoemission kinks and phonons in cuprates

18. E. Koch, G. Sangiovanni and O. Gunnarsson
Phys. Rev. B **78**, 115102 (2008) [**APS**, **ARXIV**]
Sum-rules and bath-parametrization for quantum cluster theories

17. G. Sangiovanni and O. Gunnarsson
J. Phys.: Conf. Ser. **108**, 012012 (2008) [**IOP**]
Electron-phonon interaction in strongly correlated electron systems: relevance of antiferromagnetic correlations

16. L. Baldassarre, A. Perucchi, D. Nicoletti, A. Toschi, G. Sangiovanni, K. Held, M. Capone, M. Ortolani, L. Malavasi, M. Marsi, P. Metcalf, P. Postorino and S. Lupi
Phys. Rev. B **77**, 113107 (2008) [**APS**, **ARXIV**]
Quasiparticle evolution and pseudogap formation in V_2O_3: An infrared spectroscopy study

15. O. Rösch, G. Sangiovanni and O. Gunnarsson
Phys. Rev. B **75**, 035119 (2007) [**APS**, **ARXIV**]
Sum rules and vertex corrections for electron-phonon interactions

14. O. Gunnarsson, G. Sangiovanni, O. Rösch, E. Koch, C. Castellani and M. Capone
Physica C **460-462**, 263 (2007) [**ELSEVIR**]
Polaron formation in cuprates

13. S. Ciuchi, G. Sangiovanni and M.Capone
Physica C **460-462**, 1157 (2007) [**ELSEVIR**]
Detecting pairing and polarization crossovers in systems with retarded interactions

12. G. Sangiovanni, O. Gunnarsson, E. Koch, C. Castellani and M. Capone
Phys. Rev. Lett. **97**, 046404 (2006) *Electron-phonon interaction and antiferromagnetic correlations*
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11. G. Sangiovanni, M. Capone and C. Castellani
Phys. Rev. B **73**, 165123 (2006) *Relevance of phonon dynamics in strongly correlated systems coupled to phonons: Dynamical mean-field theory analysis*
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Phys. Rev. B **73**, 245114 (2006) *Pairing and polarization in electron-boson systems with retarded interactions via dynamical mean-field theory*
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8. G. Sangiovanni, M. Capone, C. Castellani and M. Grilli
Phys. Rev. Lett. **94**, 026401 (2005) *Electron-phonon interaction close to a Mott transition*
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7. C. E. Creffield, G. Sangiovanni and M. Capone
Eur. Phys. J. B **44**, 175 (2005) *Phonon softening and dispersion in the 1D Holstein model of spinless fermions*
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Physica B **359-361**, 813 (2005) *Polaron crossover and bipolaronic metal-insulator transition in the half-filled Holstein model*
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5. M. Capone, G. Sangiovanni, C. Castellani and M. Grilli
Physica B **359-361**, 636 (2005) *Electron-phonon interaction in proximity of a Mott transition*
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4. M. Capone, G. Sangiovanni, C. Castellani, C. Di Castro and M. Grilli
Phys. Rev. Lett. **92**, 106401 (2004) *Phase separation close to the density-driven Mott transition in the Hubbard-Holstein model*
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3. M. Capone and G. Sangiovanni,
The effects of the electron–phonon interaction on a Mott insulator
Journal of Magnetism and Magnetic Materials **272-276**, Supplement 1, E301 (2004)
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2. G. Sangiovanni, M. Capone and S. Caprara
Time reversal breaking superconducting state in the phase diagram of the cuprates
Int. J. Mod. Phys. B **17**, 614 (2003)
[**WSCI**, **ARXIV**]

1. G. Sangiovanni, M. Capone, S. Caprara, C. Castellani, C. Di Castro and M. Grilli
Doping-driven transition to a time-reversal breaking state in the phase diagram of the cuprates
Phys. Rev. B **67**, 174507 (2003)
[**APS**, **ARXIV**]

List of invited contributions

2021 – CECAM, Bremen	**invited talk** (online) at the Psi-k Workshop *"Correlated synthetic quantum matter: theory meets experiment"*
2020 – Simons Foundation, Aspen	**invited talk** (online) at the Winter conference *"Quantum Matter: Computation Meets Experiments"*
2019 – University of Frankfurt	seminar "*First-order topological phase transitions induced by electronic correlation*", **invited** by R. Valentí
2019 – TU Ilmenau	Faculty Colloquium "*Many-body physics in quantum impurities and high-spin molecules* ", **invited** by J. Kröger
2019 – ESPCI, Paris	**invited talk** at the international conference *"ParisEdge2019"*
2019 – Microsoft Station Q, UCSB	seminar "*First-order topological phase transitions induced by electronic correlation*", **invited** by A. Antipov
2019 – University of Tokyo	**invited talk** at the workshop *"Frontiers of Correlated Electron Sciences"*
2018 – CNR, Bologna	**invited talk** at the conference *"Materials.it 2018/Topology and Electronic Correlation in Magnetism and Superconductivity"*
2018 – DIPC, San Sebastian	**invited talk** at the Workshop *"Theoretical methods in molecular spintronics"*
2018 – Sapienza University of Rome	**invited talk** at the *"International Workshop on Electronic Structure of Superconductors and Novel Materials"*
2018 – CNR-SPIN Salerno, Amalfi	**invited talk** at the workshop "*OSS 2018*"
2018 – University of l'Aquila	seminar "*Local magnetic moments in Iron and Nickel at ambient and Earth's core conditions*", **invited** by G. Profeta and S. Ciuchi
2018 – University of Tübingen	Faculty Colloquium "*Local magnetic moments in Iron and Nickel at ambient and Earth's core conditions*", **invited** by S. Andergassen

Curriculum vitae

2017 – TU Graz	seminar "*Edge reconstruction in correlated quantum spin Hall insulators*", **invited** by M. Aichhorn
2017 – ICTP/SISSA, Trieste	**invited talk** at the conference "*FisMat 2017*"
2017 – University of Michigan Ann Arbor	seminar *"Edge reconstruction in correlated quantum spin Hall insulators"*, **invited** by E. Gull
2016 – EPFL Lausanne	**invited talk** at the CECAM Workshop *"Computational methods towards engineering novel correlated materials"*
2016 – ESI Vienna	**invited talk** at the ESI Workshop *"Synergies between Mathematical and Computational Approaches to Quantum Many-Body Physics"*
2016 – Institute of Physics Prague	seminar *"First-Order Character and Observable Signatures of Topological Quantum Phase Transitions"*, **invited** by J. Kuneš
2016 – Salerno	**invited talk** at the Workshop "*Unveiling complex phenomena in Functional OXides"*
2015 – LMU Munich	**invited talk** at the CECAM Workshop *"Computational Many-Body physics in the era of artificial gauge fields"*
2015 – SISSA Trieste	seminar *"Interaction-induced topological phase transitions. A model study and perspectives for real materials",* **invited** by M. Capone
2015 – University of Würzburg Kloster Kreuzberg	**invited talk** at the "Wanderseminar", organized by F. Reinert.
2015 – Max-Planck Institute Stuttgart	**invited talk** at the Workshop "*Realistic calculations for correlated electrons*", organized by P. Hansmann and S. Andergassen.
2014 – Max-Planck Institute Stuttgart	**invited seminar** *"Electronic correlation physics in oxide heterostructures",* within the TRR 80 Collaborative Research Center led by D. Vollhardt.
2013 – TU Vienna Baumschlagerberg	**invited talk** at the ERC Workshop "*Ab Initio Dynamical Vertex Approximation*", organized by K. Held.

Curriculum vitae

2013 – Sestri Levante	**invited talk** at the International Conference *"The New Generation in Strongly Correlated Electron Systems"* NGSCES 2013.
2013 – SFB-Vicom Vienna	**invited lecture** at at the Summer School *"Band Structure Meets Many Body Theory"*
2012 – J. Gutenberg-University Mainz	**invited** Theoriekolloquium *"Signature of antiferromagnetic long-range order in the optical spectrum of strongly correlated electron systems".*
2011 – Max-Planck Institute Ringberg	**invited talk** at the meeting "*Electronic Structure of Novel Materials*".
2011 – Monastery Seeon Bavaria	**invited talk** at the workshop "*Strong Correlation from First Principles".*
2011 – University of Sherbrooke Canada	seminar *"Dynamical Vertex Approximation for nanoscopic systems",* **invited** by André-Marie Tremblay.
2010 – Villa Orlandi Anacapri	**invited talk** at the meeting *"Emerging Trends in Advanced Correlated Materials",* organized by M. Capone, V. Cataudella and G. De Filippis
2010 – Tokyo University, Dep. of Applied Physics	seminar *"Dynamical Vertex Approximation for nanoscopic systems",* **invited** by Prof. Imada
2010 – RIKEN Wako, Japan	**invited talk** at *"Advanced First Principles Calculations and Many Body Effects in Correlated Electrons"*, organized by Y. Tokura, N. Nagaosa and R. Arita
2010 – East China Normal University, Shanghai	seminar *"Dynamical Mean Field Theory: introduction and applications",* **invited** by Dr. Wenhui Xie
2010 – Stanford University Stanford	seminar *"Many-body calculations of electron-phonon properties in superconductors",* **invited** by Prof. Tom Devereaux
2009 – TU Graz	seminar *"Photoemission kinks and phonons in cuprates"*, **invited** by Prof. E. Arrigoni
2008 – Max-Planck Institut Stuttgart	*Directors' meeting talk (Vortrag anlässlich der Arbeitsbesprechung) "Quasiparticle evolution and pseudogap formation in V_2O_3"*

2007 – AIST Tsukuba	**invited talk** at the Int. Symposium on Lattice Effects in Cuprate High Temperature Superconductors *"LEHTSC 2007"*, organized by H. Oyanagi and H. Eisaki
2007 – Tokyo University, Dep. of Applied Physics	seminar *"Electron-phonon interaction in strongly correlated electron systems"*, **invited** by Prof. Imada
2007 – Tokyo University, ISSP, Kashiwa	seminar *"Electron-phonon interaction and antiferromagnetic correlations"*, **invited** by Prof. Takada
2007 – Tokyo University, Department of Physics	seminar *"Electron-phonon interaction in strongly correlated electron systems"*, **invited** by Prof. Aoki
2006 – Sestri Levante INFM	**invited talk** at the 13th national congress on high-temperature superconductivity *"SATT13"*, organized by C. Ferdeghini, M. Putti and A. Siri
2004 – Rome Università "Roma Tre"	theory seminar *"Interazione elettrone-fonone vicino ad una transizione di Mott"*, **invited** by Prof. R. Raimondi