



Curriculum vitae



Personal Information

FIRST NAME / SURNAME Giorgio Sangiovanni
PERMANENT ADDRESS Universität Würzburg
Institut für Theoretische Physik und Astrophysik
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WEB <https://www.physik.uni-wuerzburg.de/sangiovanni>
NATIONALITY Italian and German
DATE OF BIRTH 2. Aug 1976
MARITAL STATUS Married; one daughter

Employment

DATES October 2023 - present
POSITION Full Professor (W3), Chair of "Computational Quantum Materials"
INSTITUTION Julius-Maximilians-Universität Würzburg
DATES March 2012 - October 2023
POSITION Associate Professor (W2) of Theoretical Physics
INSTITUTION Julius-Maximilians-Universität Würzburg
DATES September 2008 - February 2012
POSITION University assistant
INSTITUTION Institute for Solid State Physics – TU Wien
DATES December 2004 - August 2008
POSITION Post-doc grant
INSTITUTION Max-Planck Institute for Solid State Research – Stuttgart

Education

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



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Competitions, shortlists and other achievements

DATE	September 2023
INSTITUTION	Julius-Maximilians-Universität Würzburg
POSITION	Chair of "Computational Quantum Materials"
RESULT	1 st in the shortlist and offer ("Ruf")
DATE	July 2011
INSTITUTION	Julius-Maximilians-Universität Würzburg
POSITION	W2/associate Professorship in theoretical physics
RESULT	1 st 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 – Sapienza University of Rome – short-listed, offer accepted

Recent visits

PERIOD	2023 Sep-Oct
INSTITUTION/PROGRAM	UCSB-KITP, USA – <i>Quantum Materials With and Without Quasiparticles</i> – L. Benfatto, A. Chubukov, S. Hartnoll and D. Maslov
PERIOD	2022 Mar-Apr and Oct-Nov
INSTITUTION/PROGRAM	<i>Joliot Chair</i> Visiting Faculty ESPCI, Paris, France
PERIOD	2021 Oct-Dec and 2019 Jan-Feb
INSTITUTION/PROGRAM	SIMONS FOUNDATION – CCQ, Flatiron Institute, New York, USA



Curriculum vitae

Research interests

- Theory of interacting electron systems
- Topological states of matter
- Realistic calculations of quantum materials
- Quantum magnetism
- Computational methods for strongly correlated fermions

Publication record

~150 publications in international journals
34 PRL, 1 Science, 1 Nature, 3 Nature Phys., 7 Nature Commun., 3 PRX,
4 Nano Letters, 2 npj Quantum Materials, >60 PRB/PRR (see full list)
h-index: 49 ([Google Scholar](#)), 42 (ISI Web-of-Science)

Invited talks and seminars

~50 invited talks in international conferences and invited seminars
(see below for a detailed list)

Third-party funding

- DFG – FOR 5249** Principal investigator of Project “*Modeling non-local interaction phenomena in real materials: electrons, lattice & topology*” – 4 years/235 k€
- DFG – EXC 2147** One of the funding principal investigators of [ct.qmat](#) Dresden/Würzburg cluster “*Complexity and Topology in Quantum Matter*” – 7 years
- DFG – SFB 1170** Principal investigator of two Projects in the SFB “*Topological and Correlated Electronics at Surfaces and Interfaces*” – 12 years/950 k€
- DFG – FOR 1346** Principal investigator of Project “*Realistic theory of electronic correlations in nanoscopic systems*” – 3 years/136 k€
- DFG – FOR 1162** Principal investigator of Project “*Orbital, spin and charge fluctuations in layered oxide heterostructures*” – 3 years/237 k€
- FWF** “*Lise Meitner*” fellowship M1136, project title “*At the frontiers of phonons and correlated electrons*” – 2 years/143 k€



Curriculum vitae

Organization of conferences

DATE/VENUE	2020 (postponed to 2022) Amalfi (Italy)
DESCRIPTION	2. edition of the international conference " <i>Lectiones Amalfitanæ</i> " 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 " <i>Lectiones Clitumnaliæ</i> " on electronic correlations,
OTHER ORGANIZERS	S. Andergassen and A. Toschi
DATE/VENUE	2018 Würzburg
DESCRIPTION	International Conference " <i>ToCoTronics2018</i> " 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 " <i>Second International Conference of Young Researchers on Advanced Materials</i> " IUMRS-ICYRAM
OTHER ORGANIZERS	X.-Q. Chen, C. Franchini, G. Profeta, A. Kolmogorov and R. Zhang
DATE/VENUE	2014 Nice (France)
DESCRIPTION	International Conference " <i>The New Generation in Strongly Correlated Electron Systems</i> " NGSCES 2014
OTHER ORGANIZERS	N. Bergeal, S. Kaiser and M. Schirò



Curriculum vitae

Academic activities

@UNI WÜRZBURG Program Head of Physics Bachelor and Master (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 and 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 and former group members

POSTDOC M. Karolak, D. Di Sante, L. Crippa, M. Crispino, F. Paoletti, G. Mirarchi,
M. Verma, L. Zullo, L. Del Re

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

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

BACHELOR/PROJECT T. Plote, M. Kuhr, E. Schwartzkopf, T. Schneider, 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 APS Physical Review Journals – Springer Nature Journals –
ACS Publications – ERC (European Research Council) –
Deutsche Forschungsgemeinschaft (DFG) –
Alexander von Humboldt Stiftung – PRIN (Italian Ministerium for University
and Research) – SNF (Swiss National Science Foundation)



Curriculum vitae

Five selected papers

PRL (IN PRESS) N. Wagner, D. Guerci, A. J. Millis and [G. Sangiovanni](#)

[\[ARXIV\]](#)

Edge zeros and boundary spinons in topological Mott insulators

SHORT DESCRIPTION We propose a physical interpretation of Green's function zeros via gapless edge spinons at particle-hole symmetry of U(1) spin liquids and discuss the annihilation mechanism at interfaces with quantum spin Hall systems .

NAT. COMMUN. 14, 7531 (2023) N. Wagner, L. Crippa, A. Amaricci, P. Hansmann, M. Klett, E. König, T. Schäfer, D. Di Sante, J. Cano, A. J. Millis, A. Georges and [G. Sangiovanni](#)

[\[NATURE, ARXIV\]](#)

Mott insulators with boundary zeros

SHORT DESCRIPTION We demonstrate that the topology of strongly interacting states is encoded in the single-particle Green's and uncover the surprising behavior of edge modes at interfaces between conventional and Mott topological insulators.

NAT. COMMUN. 12, 5396 (2021) 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](#)

[\[NATURE, ARXIV\]](#)

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 opens new directions in the research on topological monolayers.

PRL 114, 185701 (2015) A. Amaricci, J. C. Budich, M. Capone, B. Trauzettel and [G. Sangiovanni](#)

[\[APS, ARXIV\]](#)

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) E. Assmann, P. Blaha, R. Laskowski, K. Held, S. Okamoto and [G. Sangiovanni](#)

[\[APS, ARXIV\]](#)

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.