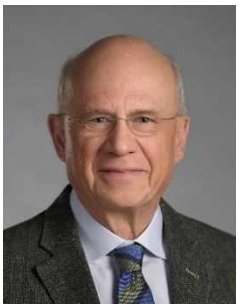
Curriculum Vitae



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Professor of Theoretical Physics, Emeritus

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Current areas of Research

Electronic correlations and magnetism in models and materials
Disordered quantum systems

Professional Training and Academic Qualifications

1971 – 1975	Study of Physics, University of Hamburg
1976 – 1977	Research at the University of Southern California, Los Angeles, USA (advisor: Prof. K. Maki)
1977	Diplom (*Dipl.-Phys.*), University of Hamburg (official thesis advisor: Prof. L. Tewordt)
1977 – 1979	Research at the University of Southern California, Los Angeles, USA (advisor: Prof. K. Maki)
1979	Doctoral degree (*Dr. rer. nat.*), University of Hamburg (official thesis advisor: Prof. L. Tewordt)
1984	Habilitation (*Dr. rer. nat. habil.*), Technical University of Munich

Academic Positions

1979 – 1984	Postdoctoral Research Associate (advisor: Prof. P. Wölfle), Max Planck Institute for Physics and Astrophysics, Werner-Heisenberg-Institute, Munich
1984 – 1987	Heisenberg-Fellow of the Deutsche Forschungsgemeinschaft, Max Planck Institute for Physics and Astrophysics, Werner-Heisenberg-Institute, Munich
1987 – 1996	Professor, Chair in Theoretical Physics, Director at the Institute for Theoretical Physics, Rheinisch-Westfälische Technische Hochschule Aachen (RWTH Aachen University)
1996 – 2018	Professor, Chair in Theoretical Physics, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg
Since April 2018	Professor of Theoretical Physics, Emeritus

Awards and Honors

	Scholarships, Fellowships, Memberships
1969 – 1979	Four Scholarships of the Studienstiftung des Deutschen Volkes
1984 – 1987	Heisenberg Fellowship of the Deutsche Forschungsgemeinschaft
2011	Elected to the Bavarian Academy of Sciences and Humanities
2020	Elected Fellow of the American Physical Society
	Honors
2001	Colloquium Ehrenfestii, Lorentz Institute of Theoretical Physics, Leiden University, Netherlands
2011	Dvorak Lecture, Institute of Physics of the Academy of Sciences of the Czech Republic, Prague
2012	Einstein Lecture, Annalen der Physik
2023	Outstanding Referee of the American Physical Society
	Awards
2006	Europhysics Prize of the European Physical Society
2010	Max Planck Medal of the German Physical Society
2011	Ernst Mach Honorary Medal of the Academy of Science of the Czech Republic
2022	Eugene Feenberg Memorial Medal in Many-Body Physics
2024	Honorary Doctorate of the University of Warsaw, Poland

Participation in Coordinated Programs of the Deutsche Forschungsgemeinschaft (DFG)

1989 – 1996	Founding Member and Member of the Board of Delegates of the Collaborative Research Center (Sonderforschungsbereich) SFB 341 *Physics of Mesoscopic and Low-Dimensional Metallic Systems* (Köln, Aachen, Jülich)
2000 – 2009	Spokesman of the Collaborative Research Center (Sonderforschungsbereich) SFB 484 *Cooperative Phenomena in Solids: Metal-Insulator-Transitions and Ordering of Microscopic Degrees of Freedom* (Augsburg)
2010 – 2017	Founding Member, Member of the Steering Committee, and Spokesman (May 2011 – April 2012) of the Transregional Collaborative Research Center TRR 80 *From Electronic Correlations to Functionality* (Augsburg, Munich)
2010 – 2017	Spokesman of the Research Unit FOR 1346 *Dynamical Mean-Field Approach with Predictive Power for Strongly Correlated Materials*
2015– 2021	Principal Investigator in the Sino-German Cooperation *Emergent Correlated Materials*

Services to the Scientific Community

1996 – 1998	Divisional Associate Editor of *Physical Review Letters*
1997 – 2001	Member of the Board of Curators of *Physikalische Blätter*, the Journal of the German Physical Society (DPG)
1998, 2001	Member of the Panel of the Dutch Foundation for Fundamental Research reviewing the program "Strongly Interacting Condensed Matter"
1999 – 2005	German Representative in Commission C5 (Low Temperatures) of the International Union of Pure and Applied Physics (IUPAP)
1999 – 2005	Associate Member of Commission C5 in Commission C9 (Magnetism) of the IUPAP
2000 – 2004	Elected Referee (*Fachgutachter*) for Condensed Matter Physics of the DFG
2000 – 2012	Member of the Scientific Advisory Board of the Max Planck Institute for Chemical Physics of Solids, Dresden
2001 – 2003	German Representative in the Scientific Council of the European Center for Atomic and Molecular Calculations (CECAM)
2002	Chairman of the Panel reviewing the Minerva Einstein Center for Theoretical Physics at the Weizmann Institute, Israel
2002 – 2013	Member of the Panel of the Swiss National Science Foundation reviewing the National Centre of Competence in Research on "Materials with Novel Electronic Properties"
2004 – 2008	Spokesman of the Review Board "Condensed Matter Physics" of the DFG
2004 – 2015	Member of the Commission for Low Temperature Research of the Bavarian Academy of Sciences and Humanities (BAdW)
2005	Member of the Panel reviewing the Department of Physics-Astronomy of the University of Bonn
2008 – 2014	Member of the Prize Committee for the Binational Prizes of the DPG
2008 – 2019	Member of the Editorial Board of *Lecture Notes in Physics* (Springer)
2012 – 2015	Chairman of the Commission for Low Temperature Research of the BAdW
2013 – 2015	Member of the Scientific Advisory Board of the Bavarian State Ministry of Education, Science and the Arts
2013 – 2017	Chairman of the Prize Committee for the Max Planck Medal of the DPG
2013 – 2018	Member of the Scientific Advisory Board of the Wilhelm and Else Heraeus Foundation
Since 2016	Chairman of the Scientific Advisory Board of the Walther-Meißner-Institute for Low Temperature Research of the BAdW
Since 2016	Member of the Scientific Advisory Board of the Center for Correlated Matter, Hangzhou, China
2022	Member of the Panel reviewing the Physics and Chemistry Research Institutes of the Faculty of Science, Utrecht University, Netherlands
Since 2022	Member of the Scientific Advisory Board of the DFG Research Unit FOR 5249 "Quantitative Spatio-Temporal Model-Building for Correlated Electronic Matter" (QUAST)
2023 – 2024	Member of the Prize Committee of the Eugene Feenberg Memorial Medal

Functions within the Scientific Self-Governance at the University of Augsburg

2007 – 2018	Member of the Executive Board of the Augsburg Center for Innovative Technologies
2010 – 2011	Managing Director of the Institute of Physics
2011 – 2013	Vice-Dean of the Faculty of Mathematics and Natural Sciences
2012 – 2020	Member of the Commission of Inquiry in Cases of Suspected Scientific Misconduct
2013 – 2015	Dean of the Faculty of Mathematics and Natural Sciences (since 2015: Faculty of Mathematics, Natural Sciences, and Materials Engineering)

Thesis and Postdoctoral Advisees (Excerpt)

Nils Blümer	Diplom 1996, Doctoral Degree 2002; Head of Computer Center, U Eichstätt-Ingoldstadt, Germany
Christoph Bruder	Diplom 1985; Professor (U Basel, Switzerland)
Ralf Bulla	Postdoc 1999–2007, Habilitation 2000; Privatdozent (U Cologne, Germany)
Krzysztof Byczuk	Postdoc 2000–2002, 2005–2008; Professor (U Warsaw, Poland)
Prabudda Chakraborty	Postdoc 2008–2011; Professor (Indian Statistical Institute, Chennai, India)
Theo Costi	Postdoc 1998–1999; Senior Researcher (Forschungszentrum Jülich, Germany)
Martin Eckstein	Diplom 2006, Doctoral Degree 2009; Professor (U Hamburg, Germany)
Peter van Dongen	Postdoc 1987–2000, Habilitation 1995; Professor (U Mainz, Germany)
Florian Gebhard	Diplom 1987, Doctoral Degree 1990; Professor (U Marburg, Germany)
Zsolt Gulácsi	Postdoc 1991–1992; Professor (U Debrecen, Hungary)
Karsten Held	Diplom 1995, Doctoral Degree 1999, Postdoc 1999-2000; Professor (TU Vienna, Austria)
Walter Hofstetter	Doctoral Degree 2000; Postdoc 2000–2001; Professor (U Frankfurt, Germany)
Vaclav Janiš	Postdoc 1990–1994; Professor (Charles U, Prague, Czech Republic)
Anna Kauch	Postdoc 2008–2011; Researcher (TU Vienna, Austria)
Stefan Kehrein	Postdoc 1996–2005, Habilitation 2001; Professor (U Göttingen, Germany)
Marcus Kollar	Doctoral Degree 1998, Postdoc 1998–2004, Habilitation 2014; Privatdozent (U Augsburg, Germany)
Jan Kuneš	Postdoc 2006–2009; Professor (Masaryk U, Brno, Czech Republic)
Ivan Leonov	Doctoral Degree 2006; Postdoc 2008–2017; Senior Researcher (Institute of Metal Physics, Ekaterinburg, Russland)
Walter Metzner	Diplom 1987, Doctoral Degree 1989, Postdoc 1989–1990, 1994–1996, Habilitation 1995; Director (MPI for Solid State Research, Stuttgart) and Honorar-Professor (U Stuttgart, Germany)
Thomas Pruschke	Postdoc 2001–2003; Professor (U Göttingen, Germany), † 2016
Xinguo Ren	Doctoral Degree 2006; Professor (Institute of Physics, Chinese Academy of Sciences, Beijing, China)
Jan Schlipf	Doctoral Degree 1998; Managing Director, Aerial PV Inspection GmbH
Rainer Strack	Diplom 1990, Doctoral Degree 1993; Senior Partner and Managing Director BCG and Honorar-Professor (U Witten Herdecke, Germany)
Ning-Hua Tong	Postdoc 2002–2004; Professor (Renmin U, China)
Sabine Tornow	Postdoc 2003–2007; Professor (U of the Bundeswehr Munich, Germany)
Götz Uhrig	Doctoral Degree 1994; Professor (U Dortmund, Germany)
Martin Ulmke	Postdoc 1996–1998; Senior Researcher (Fraunhofer FKIE, Germany)
Ruud Vlaming	Doctoral Degree 1993; Beta Research BV (Netherlands)
Matthias Vojta	Postdoc 2000-2002, Habilitation 2002; Professor (TU Dresden, Germany)
Unjong Yu	Postdoc 2006–2008; Professor (GIST, Gwangju, South Korea)

Publications

Book

The Superfluid Phases of Helium 3
D. Vollhardt, P. Wölfle; Dover Publications (2013), 656 pages [Corrected, unabridged republication of the edition originally published by Taylor & Francis, London, 1990; with a new preface]

Selected articles (Complete list of publications:
https://www.uni-augsburg.de/de/fakultaet/mntf/physik/groups/theo3/arbeitsgruppe/vollhardt/)

Effect of Dipole Interaction on Collective Modes in ^{3}He-A
L. Tewordt, N. Schopohl, D. Vollhardt, J. Low Temp. Phys. **29**, 119 (1977)

Superfluid ^{3}He in Narrow Cylinders
D. Vollhardt; Nature **276**, 325 (1978) [invited comment]

Composite Solitons in ^{3}He-A in the Presence of Superflow
D. Vollhardt, K. Maki; Phys. Rev. B **20**, 963 (1979)

Diagrammatic, Self-Consistent Treatment of the Anderson Localization Problem in $d \leq 2$ Dimensions
D. Vollhardt, P. Wölfle; Phys. Rev. B **22**, 4666 (1980)

Normal ^{3}He: An Almost Localized Fermi-Liquid
D. Vollhardt; Rev. Mod. Phys. **56**, 99 (1984)

A Gutzwiller-Hubbard Lattice Gas Model with Variable Density: Application to Normal Liquid ^{3}He
D. Vollhardt, P. Wölfle, P. W. Anderson; Phys. Rev. B **35**, 6703 (1987)

Ground State Properties of Correlated Fermions: Exact Analytic Results for the Gutzwiller Wave Function
W. Metzner, D. Vollhardt; Phys. Rev. Lett. **59**, 121 (1987)

Correlation Functions for Hubbard-Type Models: The Exact Results for the Gutzwiller Wave Function
F. Gebhard, D. Vollhardt; Phys. Rev. Lett. **59**, 1472 (1987)

Correlated Lattice Fermions in $d = \infty$ Dimensions
W. Metzner, D. Vollhardt; Phys. Rev. Lett. **62**, 324 (1989)

Coupling of Quantum Degrees of Freedom in Strongly Interacting, Disordered Electron Systems
V. Janiš, D. Vollhardt; Phys. Rev. B **46**, 15 712 (1992)

Characteristic Crossing Points in Specific Heat Curves of Correlated Systems
D. Vollhardt; Phys. Rev. Lett. **78**, 1307 (1997)

Thermodynamically consistent evaluation of equilibrium properties of normal-liquid ^3He
M. Kollar, D. Vollhardt; Phys. Rev. B **61**, 15347 (2000)

Mott-Hubbard Metal-Insulator Transition in Paramagnetic V_2O_3: an LDA+DMFT(QMC) Study
K. Held, G. Keller, V. Eyert, D. Vollhardt, V. I. Anisimov; Phys. Rev. Lett. **86**, 5345 (2001)

Finite temperature numerical renormalization group study of the Mott-transition
R. Bulla, T. A. Costi, D. Vollhardt; Phys. Rev. B **64**, 045103 (2001)

Realistic Investigations of correlated electron materials with LDA+DMFT
K. Held, I. A. Nekrasov, G. Keller, V. Eyert, N. Blümer, A. K. McMahan, R. T. Scalettar, T. Pruschke, V. I. Anisimov, D. Vollhardt; Psi-k Newsletter No. 56 (April 2003), p. 65

Strongly Correlated Materials: Insights from Dynamical Mean-Field Theory
G. Kotliar, D. Vollhardt; Physics Today **57,** No. 3 (March), 53 (2004)

Mott-Hubbard Transition versus Anderson Localization in Correlated Electron Systems with Disorder
K. Byczuk, W. Hofstetter, D. Vollhardt; Phys. Rev. Lett. **94**, 056404 (2005)

Full orbital calculation scheme for materials with strongly correlated electrons
V. I. Anisimov, D. E. Kondakov, A. V. Kozhevnikov, I. A. Nekrasov, Z. V. Pchelkina, J. W. Allen, S.-K. Mo, H.-D.Kim, P. Metcalf, S. Suga, A. Sekiyama, G. Keller, I. Leonov, X. Ren, D. Vollhardt; Phys. Rev. B **71**, 125119 (2005)

Kinks in the dispersion of strongly correlated electrons
K. Byczuk, M. Kollar, K. Held, Y.-F. Yang, I. A. Nekrasov, Th. Pruschke, D. Vollhardt; Nature Phys. **3**, 168 (2007)

NiO: Correlated Bandstructure of a Charge-Transfer Insulator
J. Kuneš, V. I. Anisimov, S. L. Skornyakov, A. V. Lukoyanov, D. Vollhardt; Phys. Rev. Lett. **99**, 156404 (2007)

Correlated bosons on a lattice: Dynamical mean-field theory for Bose-Einstein condensed and normal phases
K. Byczuk, D. Vollhardt; Phys. Rev. B **77**, 235106 (2008)

Distribution of the local density of states as a criterion for Anderson localization: Numerically exact results for various lattices in dimensions D=2 and 3
G. Schubert, J. Schleede, K. Byczuk, H. Fehske, D. Vollhardt; Phys. Rev. B **81**, 155106 (2010)

Route to ferromagnetism in organic polymers
Z. Gulácsi, A. Kampf, D. Vollhardt; Phys. Rev. Lett. **105**, 266403 (2010)

Electronic correlations at the α-γ structural phase transition in paramagnetic iron
I. Leonov, A. I. Poteryaev, V. I. Anisimov, D. Vollhardt; Phys. Rev. Lett. **106**, 106405 (2011)

Dynamical mean-field theory for correlated electrons
D. Vollhardt; Ann. Phys. (Berlin), **524**, 1 (2012) [Einstein Lecture]

Correlation-driven topological Fermi surface transition in FeSe
I. Leonov, S. L. Skornyakov, V. I. Anisimov, D. Vollhardt; Phys. Rev. Lett. **115**, 106402 (2015)

Typical-medium, multiple-scattering theory for disordered systems with Anderson localization
H. Terletska, Y. Zhang, L. Chioncel, D. Vollhardt, M. Jarrell; Phys. Rev. B **95**, 134204 (2017)

Dynamical Mean-Field Theory of Strongly Correlated Electron Systems
D. Vollhardt; Proceedings of SCES2019, JPS Conf. Proc. **30**, 011001 (2020)

Why Calculate in Infinite Dimensions?
D. Vollhardt; in "Dynamical Mean-Field Theory of Correlated Electrons", eds. E. Pavarini, E. Koch, A. Lichtenstein, and D. Vollhardt, Reihe "Modeling and Simulation", Vol. 12, (Forschungszentrum Jülich, 2022), Chapter 1