

Brief Curriculum Vitae

Name Dieter Vollhardt

Date of Birth September 8, 1951

Address Theoretical Physics III
Center for Electronic Correlations and Magnetism
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Current Areas of Research

- Electronic correlations and magnetism
- Electronic properties and structural stability of correlated materials
- Disordered systems
- Tools in quantum many-body theory

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 (Prof. K. Maki)

1977 Diplom, University of Hamburg (Prof. L. Tewordt)

1977 – 1979 Research at the University of Southern California, Los Angeles, USA (Prof. K. Maki)

1979 Doctorate, University of Hamburg (Prof. L. Tewordt)

1984 Habilitation, Technical University of Munich

Fellowships and Employments

1979 – 1984 Postdoctoral Research Associate (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 (Aachen Institute of Technology)

Since 1996 Professor, Chair in Theoretical Physics, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg

Awards and Honors

1969 – 1979 Four Scholarships of the German National Academic Foundation (Studienstiftung des Deutschen Volkes)

1984 Heisenberg-Fellowship of the Deutsche Forschungsgemeinschaft

2001 Ehrenfest Colloquium, University of Leiden

2006 Europhysics Prize of the European Physical Society

2010 Max Planck Medal of the German Physical Society

2011 Election to the Bavarian Academy of Sciences and Humanities

2011 Ernst Mach Honorary Medal of the Academy of Science of the Czech Republic

2011 Dvorak Lecture, Academy of Sciences of the Czech Republic, Prague

2012 Einstein Lecture, Annalen der Physik

2016 Lecture of Outstanding International Scientists, University of Science and Technology of China, Hefei

2016 Distinguished Speaker, Qiu-Shi Forum in Natural Sciences, Zhejiang University, Hangzhou, China

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 <i>Physics of Mesoscopic and Low-Dimensional Metallic Systems</i> (Köln, Aachen, Jülich)
2000 – 2009	Spokesman of the Collaborative Research Center (Sonderforschungsbereich) SFB 484 <i>Cooperative Phenomena in Solids: Metal-Insulator-Transitions and Ordering of Microscopic Degrees of Freedom</i> (Augsburg)
Since 2010	Founding Member, Member of the Steering Committee, and Spokesman (May 2001 – April 2012) of the Transregional Collaborative Research Center TRR 80 <i>From Electronic Correlations to Functionality</i> (Augsburg, Munich)
Since 2010	Spokesman of the Research Unit FOR 1346 <i>Dynamical Mean-Field Approach with Predictive Power for Strongly Correlated Materials</i>
Since 2015	Principal Investigator in the Sino-German Cooperation <i>Emergent Correlated Materials</i>

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

Since 2007	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
2013 – 2015	Dean of the Faculty of Mathematics and Natural Sciences (since 2015: Faculty of Mathematics, Natural Sciences, and Materials Engineering)

Services to the Scientific Community (Excerpt)

1996 – 1998	Divisional Associate Editor of <i>Physical Review Letters</i>
1997 – 2001	Member of the Board of Curators of <i>Physikalische Blätter</i> , the Journal of the German Physical Society (DPG)
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 (Low Temperatures) in Commission C9 (Magnetism) of the IUPAP
2001 – 2003	German Representative in the Scientific Council of the European Center for Atomic and Molecular Calculations (CECAM)
2000 – 2004	Elected Referee (<i>Fachgutachter</i>) for Condensed Matter Physics of the DFG
2000 – 2012	Member of the Scientific Council of the Max Planck Institute for Chemical Physics of Solids, Dresden
2002 – 2013	Member of the Review Panel of the Swiss National Science Foundation for 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
2008 – 2014	Member of the Prize Committee for the Binational Prizes of the DPG
2012 – 2015	Chairman of the Commission for Low Temperature Research of the Bavarian Academy of Sciences and Humanities and Humanities
2013 – 2015	Member of the Scientific Advisory Board of the Bavarian State Ministry of Education, Science and the Arts
Since 2008	Member of the Editorial Board of <i>Lecture Notes in Physics</i> (Springer)
Since 2013	Chairman of the Prize Committee for the Max Planck Medal of the DPG
Since 2013	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 Bavarian Academy of Sciences and Humanities
Since 2016	Member of the Scientific Advisory Board of the Center for Correlated Matter, Hangzhou, China

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 Publications:

Composite Solitons in $^3\text{He-A}$ 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 ^3He : An Almost Localized Fermi-Liquid

D. Vollhardt; Rev. Mod. Phys. **56**, 99 (1984)

Resonant Impurity Scattering in Heavy Fermion Superconductors

P. Hirschfeld, D. Vollhardt, P. Wölfle; Solid State Comm. **59**, 111 (1986)

A Gutzwiller-Hubbard Lattice Gas Model with Variable Density: Application to Normal Liquid ^3He

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)

Ferromagnetism in Correlated Electron Systems: Generalization of Nagaoka's Theorem

M. Kollar, R. Strack, D. Vollhardt; Phys. Rev. B **53**, 9255 (1996)

Characteristic Crossing Points in Specific Heat Curves of Correlated Systems

D. Vollhardt; Phys. Rev. Lett. **78**, 1307 (1997)

Mott-Hubbard Metal-Insulator Transition in Paramagnetic V_2O_3 : an LDA+DMFT(QMC) Study

K. Held, G. Keller, V. Eyert, D. Vollhardt, and 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)

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)

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)

Complete list of publications: <http://www.physik.uni-augsburg.de/theo3/vollhardt/>
