

## **Curriculum Vitae**

### **Prof. Dr. JÖRG SCHMALIAN**

Karlsruhe Institute of Technology (KIT)  
Institute for Theory of Condensed Matter (TKM)  
Institute for Solid State Research (IFP), Karlsruhe, Germany



Jörg Schmalian is professor of theoretical physics at the Karlsruhe Institute of Technology, working on the quantum physics of electrons in strongly correlated materials. He and his research team develop theories and make predictions for materials with novel electric, optic, magnetic, and thermal properties. He contributes to the understanding of unconventional superconductivity, emergent magnetic order, electronic hydrodynamics, and the role of disorder in correlated electron systems. He has about 200 publications in peer reviewed journals, including approx. 50 in Physical Review Letters, 90 in Physical Review, 20 in Nature Journals [h-index = 50 (Web of Science), 56 (Google scholar)]. In addition, he published 5 popular science articles, 3 book chapters.

### **ACADEMIC HISTORY**

Spring 2019 Visiting Professor, Stanford University, USA  
Spring 2015 Visiting Professor, University Paris Diderot-Paris 7, France  
2013– present Head, Theory Group, Institute for Solid State Physics (IFP),  
Karlsruhe Institute of Technology (KIT), Germany  
2011– present Professor and Head of the Institute for Theory of Condensed Matter (TKM),  
Karlsruhe Institute of Technology (KIT), Germany  
2009 – 2012 Visiting Professor, Royal Holloway University of London, UK  
2007 – 2011 Professor, Department of Physics and Astronomy, Iowa State University and  
Senior Physicists of the US-DOE Ames Laboratory, USA  
2002 – 2007 Associate Professor, Department of Physics and Astronomy, Iowa State  
University and Physicists of the US-DOE Ames Laboratory, USA  
1999 – 2002 Assistant Professor, Department of Physics and Astronomy, Iowa State  
University and Associate Physicist of the Ames Laboratory, USA  
1999 Scientific Staff, ISIS Neutron Facility, Rutherford Appleton Laboratory,  
Fellow of St. Catherine's College in the University of Oxford, UK  
1997 – 1999 Postdoctoral research associate and Visiting Research Assistant  
Professor, University of Illinois at Urbana-Champaign, USA  
1994 - 1996 Postdoctoral research associate Freie University, Berlin, Germany,

### **EDUCATION**

#### *Graduate:*

1990 – 1993 Freie Universität Berlin, Germany (Advisor Prof. Karl H. Bennemann). Ph.D.  
(Dr. rer. nat) awarded in 1993, graduated with *summa cum laude*.

#### *Undergraduate:*

1985 – 1990 Physics, at the Department of Physics, Universities Merseburg and Leipzig,  
Germany. Diploma Degree in Physics awarded in 1990, Tech. Univ. Merseburg.

## HONORS

- 2018: Election, Member of the Heidelberg Academy of Sciences
- 2015: Department's Teaching Award of the President's Office of the Karlsruhe Institute of Technology for exceptional teaching, in particular in the area of Theoretical Physics
- 2014: Elected as Highly Cited Researcher in the sciences and social sciences by Thomson und Reuters (highlycited.com)
- 2013: Election to the Berlin Scientific Society (Berliner Wissenschaftliche Gesellschaft)
- 2013: Award of the Department of Physics, Karlsruhe Institute for Technology for Best Lecture in Theoretical Physics at the Master Level
- 2012 and 2014: Award of the Department of Physics, Karlsruhe Institute for Technology for Best Lecture in Theoretical Physics at the Bachelor level
- 2010, 2009 and 2007: *Graduate Teaching Award*, Dept. of Physics and Astronomy, Iowa State University. The recipient is selected by the graduate students of the department as "best classroom teacher".
- 2007: Recipient of the Iowa State University College of Liberal Arts and Sciences *Mid-Career Award for Excellence in Research*.
- 2006: Fellow of the American Physical Society. The citation of the award reads:

*For pioneering contributions to the theory of strongly correlated materials, including studies on the role of disorder, frustration and unconventional pairing in quantum many-body systems.*

- 2003: Recipient of the Iowa State Foundation *Award for Early Achievement in Research*
- 1999: ATLAS Fellow, St. Catherine's College in the University of Oxford
- 1994: Recipient of the *Carl Ramsauer Research Award* of the AEG / Daimler Benz Corporation for outstanding Ph.D. thesis at a University in Berlin

## SERVICE AND PROFESSIONAL INVOLVEMENT

### Advisory boards and panels

- Award Committee, Bardeen Prize for the Theory of Superconductivity (2018)
- Scientific Advisory Board, Max-Planck-Institute for Solid-State Physics, Stuttgart, Germany (2017-2022)
- Election to the Review Board "Theoretical Physics of Condensed Matter" of the German Science Foundation (DFG) 2016-2024
- Review panel of the Leibniz Institute for Solid State Research (IFW) in Dresden, June 2014
- Review panel (chair) of the Department of Physics and Earth Sciences, University of Leipzig, November 24-27, 2013 and November 09-11, 2016
- Treasurer (2013-2017), Trustee (2008 – 2015); Scientific Secretary (2007/2008) and General Member (2005 – 2020) of the Aspen Center for Physics, Aspen, Colorado
- Member, Postdoctoral Fellowship Committee, German Academic Exchange Service, DAAD, (2011-present)
- Reviewer, Program Review Division of Materials Science and Engineering at DOE Brookhaven National Laboratory (2011)
- Reviewer, Program Review Division of Materials Science and Engineering at DOE Oak Ridge National Laboratory, Oak Ridge, TN (2009)
- Science Steering Committee (2003 – 2011) and Executive Committee (2012-present) of the

Institute for Complex Adaptive Matter, University of California

### **Organization of conferences, workshops, and schools**

- Organizer, SPICE workshop: Elastic Tuning and Response of Electronic Order, December 09-11, 2019, Mainz Germany.
- Organizer, The David Pines Symposium on Superconductivity Today and Tomorrow, March 29-30, 2019, Urbana, IL, USA
- Organizer, Emergence in disordered, interacting and living systems: Abrahams@90, August 12, 2017, Aspen, Colorado, USA
- Chair, Gordon Research Conference, *Correlated Electron Systems, Textures and Topology in Electron Systems*, June 22-27, 2014 Mount Holyoke College, South Hadley, MA, USA
- Organizer, International Summer School, *Superconductivity – Theory, Experiments, and Phenomena*, Cargèse, France, August 5-17, 2013
- Organizer, workshop “*Electronic Correlations and Disorder in Quantum Matter*” Dedicated to Peter Wölfle's 70<sup>th</sup> birthday, March 31- April 3, 2012, Karlsruhe, Germany
- Organizer, Aspen Winter Conference “*Contrasting superconductivity in cuprates and pnictides*” January 22-27, (2011), Aspen, USA
- Organizer, 2010 Summer Workshop Series, *Condensed Matter Physics in the City*, July 05–30, 2010, London, U.K.
- Organizer, ICAM conference: *The superfluid universe*, August 17– 19, 2007, Snowmass, USA
- Organizer, workshop: *Complexity in correlated electron systems*, June 2005, KITP Santa Barbara, USA
- Organizer, workshop: *Structure, correlations and dynamics in glasses*, August 2005, Aspen, USA
- Organizer, workshop: *Electronic systems with slow, frustration driven dynamics*, December 11– 14, 2003. San Diego, USA
- Organizer, symposium: *Strongly Correlated Electrons in High- $T_c$  Superconductors*, 1996, Berlin, Germany

### **Editorial activities**

- Guest editor, jointly with Laura H. Greene (Urbana) and Joe Thompson (Los Alamos), in Reports in Progress in Physics issue on strongly correlated materials (2016)
- Guest editor, jointly with Maciej Lewenstein (Barcelona), Giovanni Modugno (Florence), and Costas Soukoulis, (Iowa State Univ.), of a New Journal of Physics focus issue on the Frontiers of Disorder Physics (2013)
- Peer reviewing for scientific journals: Nature, Nature Physics, Science, Physical Review Letters, Physical Review B+E, Europhysics Letters, Europhysical Journal , Journal of Physics, Reports on Progress in Physics, and Reviews of Modern Physics
- Book reviews for Addison Wesley Publishing Co. and Cambridge University Press

### **TEACHING**

#### **Courses [Teaching evaluation at KIT]**

- Theory of Condensed Matter Physics II at KIT (2016, 2018)[1.14]
- Quantum Mechanics at KIT (2015,2017) [1.22]
- Theory of Superconductivity at KIT (2014) [1.21,1.18]
- Introductory Classical Mechanics at KIT (2013) [1.83]
- Field theory in Condensed Matter Physics at KIT (2013 [1.16],2015 [1.6])

- Statistical Mechanics at KIT (2012,2014 [1.38])
- Theory of Condensed Matter Physics I at KIT (2011-2012, 2012-2013)
- Graduate course in group theory and symmetry at ISU (2009-2011)
- Graduate course in advanced classical mechanics at ISU (2010)
- Calculus based introductory course for engineering majors at ISU (2009)
- Undergraduate laboratory at ISU for physics majors (2003) and engineering majors (2000)
- Graduate courses in quantum mechanics I and II at ISU (2006-2009)
- Graduate course in quantum many body theory at ISU (2004)
- Graduate course in statistical mechanics at ISU (2003-2005)
- Graduate course in solid state physics at Iowa State Univ. (ISU) (1999-2002)
- Tutorial in Quantum Statistics at St. Catherine's College, Univ. of Oxford (1999)

### **Training of Doctoral Students:**

- Egor Kiselev (2020)
- Matthias Hecker (2020)
- Markus Klug (2020)
- Pia Gagel (2017)
- Meng-Chieh Ling (2016), next position: Senior Data Scientist at AGT International Darmstadt
- Julia Link (2017), next position, postdoc at KIT, current position postdoc Simon Frazer University, CA
- Mareike Hoyer (2017), next position, postdoc at KIT
- Patrik Hlobil (2016), next position, postdoc at KIT; current position Traffic Data Analyst / Transport Modeller, PTV Group Karlsruhe
- Mathias Scheurer (2016), current position, postdoc Harvard University, MA, USA
- Bhilahari Jeevanesan (2016), next position, postdoc at KIT, current position, Scientist, Carl Zeiss, Oberkochen
- Junhua Zhang (2011), next position: postdoc Department of Physics College of William and Mary in Williamsburg, VA, USA; current position: postdoc, University of California at Riverside, USA
- Jun Liu (2007), W.Fox award for exceptional Ph.D. thesis at ISU; next position: postdoc at the DOE Oak Ridge National Laboratory, USA; current position: research staff at the DOE Ames Laboratory, USA
- Sangwook Wu (2005), next position: postdoc at the Department of Chemie, Univ. von North Carolina in Chapel Hill, current position: Professor, Department of Physics, Pukyong National University, South Korea

### **Training of Postdoctoral Researchers:**

- Una Karahasanovic (2013-2016) postdoc with a fellowship of the Helmholtz Foundation
- Peter Orth (2011-2015), Head of a Research Group in the Young Investigator Network at KIT, current position: Assistant Professor, Department of Physics and Astronomy, Iowa State University, Ames, IA, USA
- Sergey Syzranov (2011-2013), , recipient of a Feodor Lynen Fellowship of the Humboldt Association, current position: postdoc at the University of Maryland, College Park, USA
- Rafael Fernandes (2008-2011), next position: postdoc, Columbia University, NY and at the Los Alamos Natl. Laboratory, Los Alamos, NM, USA; current position: Assistant Professor, University of Minnesota in Minneapolis, MN, USA
- Rastko Sknepnek (2006 – 2009), supervision jointly with Prof. Monica Lamm, ISU-Dept. for Chemistry; next position: postdoc Northwestern University, Evanston, IL, USA;

- current position: Lecturer for Physics at the University Dundee, UK.
- Daniel Sheehy (2006 – 2007), next position: Assistant Professor, Louisiana State University (LSU) in Baton Rouge, USA; current position: Associate Professor, LSU.
  - Maxim Dzero (2003 – 2006), recipient of the 2005- postdoctoral fellowship of the Institute for Complex Adaptive Matter; next position: postdoc at Rutgers University, NJ and Columbia University, NY, USA; current position: Associate Professor Kent University, OH, USA
  - Ewelina Hankiewicz (2002 – 2003), next position: postdoc Texas A&M University, USA; current position: Professor (W2) at the University Würzburg
  - Harry Westfahl Jr. (1999 – 2002), next position: Head of the Theory Group at the National Synchrotron Laboratory Campinas (NSLC) in Brasil, current position: Scientific Director of NSLC