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Assistant Professor  
*Department of Physics and Medical Engineering*  
*Rzeszów University of Technology*  
*35-959 Rzeszów, Poland*

## **Education**

- 2006                      Ph.D., Theoretical Condensed Matter Physics with Igor Lerner  
*The University of Birmingham, UK*  
Thesis: "The Coulomb Blockade in Quantum Dots and a  
Metamagnetic Quantum Critical Point"
- 2002                      MSci. First Class (Honours)  
Theoretical Physics and Applied Mathematics  
*The University of Birmingham, UK*  
Awards: Moreton Prize

## **Previous Academic Employment**

- 2015 - 2017              Research Associate Postdoctoral Fellow  
*Institute for Mathematical and Theoretical Physics*  
*Department of Physics, Michigan State University*  
*East Lansing, U.S.A.*
- 2013 - 2015              Postdoctoral Researcher  
*Institute of Theoretical Physics, CEA Saclay*  
*Saclay, France*
- 2010 - 2013              Postdoctoral Researcher and Teaching Assistant  
*Department of Physics, University of Kaiserslautern*  
*Kaiserslautern, Germany*
- 2007 - 2009              Postdoctoral Researcher  
*Institute of Physics, Martin-Luther-University*  
*Halle (Saale), Germany*
- 2006 - 2007              Postdoctoral Researcher  
*Max-Planck Institute for Microstructure Physics*  
*Halle (Saale), Germany*

## **Publications**

### **Journal Articles:**

1. N. Sedlmayr, P. Jäger, M. Maiti, and J. Sirker  
*Bulk-boundary correspondence for dynamical phase transitions in one-dimensional topological insulators and superconductors*  
**Phys. Rev. B**, **97**, 064304 (2018)
2. N. Sedlmayr, M. Fleischhauer, and J. Sirker  
*Fate of dynamical phase transitions at finite temperatures and in open systems*  
**Phys. Rev. B**, **97**, 45147 (2018)
3. N. Sedlmayr, V. Kaladzhyan, C. Dutreix, and C. Bena  
*Bulk boundary correspondence and the existence of Majorana bound states on the edges of 2D topological superconductors*  
**Phys. Rev. B**, **96**, 184516 (2017)
4. D. Morath, N. Sedlmayr, J. Sirker, and S. Eggert  
*Conductance in inhomogeneous quantum wires: Luttinger liquid predictions and quantum Monte Carlo results*  
**Phys. Rev. B**, **94**, 115162 (2016)
5. M. Guigou, N. Sedlmayr, J.M. Aguiar-Hualde, and C. Bena  
*Signature of a topological phase transition in long SN junctions in the spin-polarized density of states*  
**Europhys. Lett.**, **115**, 47005 (2016)
6. E. König, A. Levchenko, and N. Sedlmayr  
*Universal fidelity near quantum and topological phase transitions in finite 1D systems*  
**Phys. Rev. B**, **93**, 235160 (2016)
7. I.M. Dayton, N. Sedlmayr, V. Ramirez, T. Chasapis, R. Loloee, M. Kanatzidis, A. Levchenko, and S. Tessmer  
*Scanning tunneling microscopy of superconducting topological surface states in Bi<sub>2</sub>Se<sub>3</sub>*  
**Phys. Rev. B (Rapid Comm.)** **93**, 220506(R) (2016)
8. N. Sedlmayr, J.M. Aguiar-Hualde, and C. Bena  
*Majorana bound states in open quasi-1D and 2D systems with transverse Rashba coupling*  
**Phys. Rev. B**, **93**, 155425 (2016)
9. N. Sedlmayr, M. Guigou, P. Simon, and C. Bena  
*Majoranas with and without a 'character': hybridization, braiding and Majorana number*  
**Journal of Physics: Condensed Matter**, **27**, 455601 (2015)
10. N. Sedlmayr, and C. Bena  
*Visualising Majorana bound states in 1D and 2D using the generalized Majorana polarization*  
**Phys. Rev. B**, **92**, 115115 (2015)
11. N. Sedlmayr, J.M. Aguiar-Hualde, and C. Bena  
*Flat Majorana bands in 2-d lattices with inhomogeneous magnetic fields: topology and stability*  
**Phys. Rev. B**, **91**, 115415 (2015)

12. J. Sirker, M. Maiti, N.P. Konstantinidis, and N. Sedlmayr  
*Boundary fidelity and entanglement in the symmetry protected topological phase of the SSH model*  
**Journal of Statistical Mechanics: Theory and Experiment, P10032 (2014)**
13. J. Sirker, N.P. Konstantinidis, F. Andraschko, and N. Sedlmayr  
*Locality and thermalization in closed quantum systems*  
**Phys. Rev. A, 89, 042104 (2014)**
14. N. Sedlmayr, D. Morath, J. Sirker, S. Eggert, and I. Affleck  
*Conducting fixed points for inhomogeneous quantum wires: a conformally invariant boundary theory*  
**Phys. Rev. B, 89, 045133 (2014)**
15. N. Sedlmayr, V.K. Dugaev, and J. Berakdar  
*Dynamics of the polarization of a pinned domain wall in a magnetic nanowire*  
**Physica Status Solidi (b), 251, 231 (2014)**
16. N. Sedlmayr, P. Korell, and J. Sirker  
*Two-band Luttinger liquid with spin-orbit coupling: Applications to monatomic chains on surfaces*  
**Phys. Rev. B., 88, 195113 (2013)**
17. N. Sedlmayr, J. Ren, F. Gebhard, and J. Sirker  
*Closed and open system dynamics in a fermionic chain with a microscopically specified bath: Relaxation and thermalization*  
**Phys. Rev. Lett. 110, 100406 (2013)**
18. N. Sedlmayr, P. Adam, and J. Sirker  
*Theory of the conductance of interacting quantum wires with good contacts and applications to carbon nanotubes*  
**Phys. Rev. B., 87, 035439 (2013)**
19. N. Sedlmayr, J. Ohst, I. Affleck, J. Sirker, and S. Eggert  
*Transport and scattering in inhomogeneous quantum wires*  
**Phys. Rev. B (Rapid Comm.) 86, 121302(R) (2012)**
20. N. Sedlmayr and J. Berakdar  
*Negative differential magnetoresistance in ferromagnetic wires with domain walls*  
**Phys. Rev. B, 86, 024409 (2012)**
21. F. Gebhard, K. zu Münster, J. Ren, N. Sedlmayr, J. Sirker, and B. Ziebarth  
*Particle injection into a chain: decoherence versus relaxation for Hermitian and non-Hermitian dynamics*  
**Annalen der Physik, 524, 286 (2012)**
22. N. Sedlmayr, V.K. Dugaev, M. Inglot, and J. Berakdar  
*Indirect interaction of domain walls*  
**Physica Status Solidi RRL, 5, 450 (2011)**
23. N. Sedlmayr, S. Eggert, and J. Sirker  
*Electron scattering from domain walls in ferromagnetic Luttinger liquids*  
**Phys. Rev. B, 84, 024424 (2011)**
24. N. Sedlmayr, V.K. Dugaev, and J. Berakdar  
*Spin density waves and domain wall interactions in nanowires*  
**Phys. Rev. B, 83, 174447 (2011)**

25. N. Sedlmayr, V.K. Dugaev, and J. Berakdar  
*Role of non-collinear magnetization: from ferromagnetic nanowires to rings*  
**Physica Status Solidi (b)**, **247**, 2603 (2010)
26. N. Sedlmayr, V.K. Dugaev, and J. Berakdar  
*Current-induced interactions of multiple domain walls in magnetic quantum wires*  
**Phys. Rev. B**, **79**, 174422 (2009)
27. N. Sedlmayr and J. Berakdar  
*Transport properties of an interacting quantum dot in a non-uniform magnetization*  
**Europhys. Lett.**, **83**, 57003 (2008)
28. N. Sedlmayr, I.V. Yurkevich, and I.V. Lerner  
*Tunnelling density of states at Coulomb blockade peaks*  
**Europhys. Lett.**, **76**, 109 (2006)

#### Conference Proceedings:

29. N. Sedlmayr, S. Eggert, and J. Sirker  
*Non-collinear ferromagnetic Luttinger liquids*  
**J. Phys.: Conf. Ser.**, **303**, 012107 (2011)
30. N. Sedlmayr, V.K. Dugaev, J. Berakdar, V.R. Vieira, M.A.N. Araújo, and J. Barnaś  
*Spin and charge transport through non-collinear magnetic nanowires*  
**J. Magn. Magn. Mater.**, **322**, 1419 (2010)

#### On-line book chapters:

31. N. Sedlmayr, J. Berakdar, M.A.N. Araújo, V.K. Dugaev, and J. Barnaś  
*Charge and spin transport in magnetic nanowires*  
**Nanowires – Fundamental Research (Intech, Croatia) (2011)**

#### Seminars and colloquia

- 2018 *Symposium on the Physics of Majorana Bound States*, Warsaw, 5<sup>th</sup> January
- 2017 IPhT, CEA Saclay, France, 25<sup>th</sup> September
- 2017 *APS March Meeting*, New Orleans, USA 13<sup>th</sup>-17<sup>th</sup> March
- 2016 University of Wisconsin-Madison, Madison, USA, 15<sup>th</sup> November
- 2016 University of Manitoba, Winnipeg, Canada, 25<sup>th</sup> November
- 2016 *APS March Meeting*, Baltimore, USA 14<sup>th</sup>-18<sup>th</sup> March
- 2014 Technical University of Kaiserslautern, Germany, 6<sup>th</sup> November
- 2013 *SFB/TRR 49*, Bensheim, Germany, 19<sup>th</sup>-20<sup>th</sup> September
- 2013 *APS March Meeting*, Baltimore, USA 18<sup>th</sup>-22 March
- 2012 Marburg University, Germany, 8<sup>th</sup> November
- 2012 *CMD24-CMMP12*, Edinburgh, Scotland, 3<sup>rd</sup>-7<sup>th</sup> September
- 2012 *DPG Spring Meeting*, Berlin, Germany, 26<sup>th</sup>-30<sup>th</sup> March
- 2012 *APS March Meeting*, Boston, USA, 27<sup>th</sup> February-3 March
- 2011 *CMMP11*, Manchester, England, 13<sup>th</sup>-15<sup>th</sup> December
- 2011 *SFB/TRR 49*, Alzey, Germany, 15<sup>th</sup>-16<sup>th</sup> September
- 2011 Max Planck Institute for Solid State Research, Stuttgart, Germany, 6<sup>th</sup> July
- 2011 Martin-Luther University, Halle, Germany, 2<sup>nd</sup> May
- 2011 *APS March Meeting*, Dallas, USA, 21<sup>st</sup>-25<sup>th</sup> March
- 2010 *Joint European Magnetic Symposia*, Krakow, Poland, 23<sup>rd</sup>-28<sup>th</sup> August
- 2009 *DPG Spring Meeting*, Dresden, Germany, 22<sup>nd</sup>-27<sup>th</sup> March

## **Teaching Experience**

### **Rzeszów University of Technology, Poland**

2018	Physics II	Lecture course
2018	Higher Mathematics in English II	Lecture course
2018	Physics II	Exercise classes
2017	Linear Algebra	Lecture course
2017	Mechanics	Laboratory

### **Michigan State University, USA**

2017	Calculus	Lecture course
2016	Linear Algebra	Lecture course

### **University of Kaiserslautern, Germany**

2012	Condensed matter field theory	Exercise classes and exams
2011	Advanced quantum mechanics	Exercise classes and exams
2011	Many-body theory	Exercise classes and exams
2010	Quantum mechanics	Exercise classes and exams

### **Martin-Luther-University, Halle (Saale), Germany**

2009	Quantum field theory	Exercise classes
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### **University of Birmingham, UK**

2002-2006	Mathematics for physicists	Exercise classes
2004	C++	Laboratory

## **Additional Information**

Societies	Associate member of the Institute of Physics (UK)	
Referee	PRL, PRB, Annals of Physics, JMMM, New Journal of Physics, Canadian Journal of Physics, Journal of Physics: Condensed Matter	
Languages	English (native speaker), German (advanced), Polish (beginner), French (beginner)	