

Contact details

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Personal details

Date of birth 11th of April, 1988 in Erfurt, Germany
Marital status Married
Citizenship German

Academic career

since 10/2016 **Postdoctoral fellow**, Israel Institute of Technology (Technion), Haifa (Israel), with Prof. Dr. Yehuda Pinchover and Assistant Prof. Dr. Ram Band
03/2012 – **PhD in Mathematics**, Friedrich-Schiller-Universität Jena, Germany,
10/2016 *Spectral approximation of aperiodic Schrödinger operators*, Prof. Dr. Daniel Lenz, Department of Analysis
10/2006 – **Diploma in Mathematics**, Friedrich-Schiller-Universität Jena, Germany,
02/2012 *Generalized Bloch Theory for Quasicrystals*, Prof. Dr. Daniel Lenz, Department of Analysis

Academic activities

02/2014 – **Research collaborator (Student internship J1)**
04/2014 Georgia Institute of Technology, Atlanta, USA,
funded by a grant of the National Science Foundation, DMS 1160962
with Prof. Dr. Jean Bellissard
08/2009 – **Exchange semester**
12/2009 Faculty of science, University of Joensuu, Finland

Research interest

- Spectral theory of random Schrödinger operators, partial differential equations, approximation theory, dynamical systems, Delone sets, operator algebras

Publications

Manuscripts

- [1] *Delone dynamical systems and spectral convergence*, (with Felix Pogorzelski), Preprint, arXiv:1711.07644 (2017)
- [2] *Spectral continuity for aperiodic quantum systems, I. General theory*, (with Jean Bellissard, Giuseppe de Nittis), Preprint, arXiv:1709.00975 (2017)
- [3] *Shnol-type theorem for the Agmon ground state*, (with Yehuda Pinchover), Preprint, arXiv:1706.04869 (2017)

Publications in Peer-Reviewed Journals

- [4] *On the spectrum of operator families on discrete groups over minimal dynamical Systems*, (with Daniel Lenz, Marko Lindner, Christian Seifert), to appear in *Mathematische Zeitschrift* (2017)
- [5] *Continuity of the spectrum of a field of self-adjoint operators*, (with Jean Bellissard), *Ann. Henri Poincaré* **17** (2016), no. 12, 3425 – 3442
- [6] *Note on spectra of non-selfadjoint operators over dynamical system*, (with Daniel Lenz, Marko Lindner, Christian Seifert), to appear *Proc. Edinburgh Math. Soc.* (2016)
- [7] *Spectrum of Lebesgue measure zero for Jacobi operators of quasicrystals*, (with Felix Pogorzelski), *Math. Phys. Anal. Geom.* **16** (2013), no. 3, 289 – 308

Reports

- [8] *Spectral stability of Schrödinger operators in the Hausdorff metric*, to appear in *Oberwolfach Report 46/2017*

Qualification theses

- [9] *Spectral approximation of aperiodic Schrödinger operators*, Dissertation, Friedrich-Schiller-Universität Jena, Germany, 2016
- [10] *Generalized Bloch Theory for Quasicrystals*, Diploma thesis, Friedrich-Schiller-Universität Jena, Germany, 2012

Refereeing activities

Journal of Mathematical Reports

Scholarship/Funding

- 1/2018 **Scholarship for "Research in Pairs"**
at the Mathematisches Forschungsinstitut Oberwolfach, Germany
- 10/2016 **Israel Institute of Technology (Technion)**, Haifa, Israel,
Postdoctoral Fellowship
- 07/2015 **Scholarship of the DAAD**, Program to participate at congresses,
XVIII International Congress on Mathematical Physics, Santiago de Chile, Chile
- 03/2013 - **Funding for the PhD seminar**
09/2016 "Förderung von interdisziplinären Arbeitsgruppen und Nachwuchsnetzwerken"
funded by the Graduierten-Akademie in Jena

Co-organized program

- 2015 **PhD program - Frege-Kolleg** in cooperation with the Faculty of mathematics and computer science at the Friedrich-Schiller-Universität Jena: it provides the frame for young researchers to improve their skills, broaden their mathematical horizon and organize own projects (www.frege-kolleg.uni-jena.de)

Teaching experiences & professional training

- 09/2017 **Minicourse on "K-theory and its relation to the Gap-labeling theorem"**, Technion, Israel
- 10/2010 – 09/2016 **Teaching assistant**, Friedrich-Schiller-Universität Jena, Tutorials in Analysis 1-3, Linear Algebra and Geometry 1-2, Ordinary Differential Equations, Functional Analysis 1
- 04 – 12/2015 **Education in teaching**, Basic course
- 2015 **Education in teaching**, Courses: "Methods in higher education", "Reducing and structuring the content", "How to activate and motivate the students"

Co-organization of scientific meetings

- 03/2013 – 09/2016 **PhD seminar**, Friedrich-Schiller-Universität Jena
- 2013 – 2015 **Colloquium: "Job opportunities for mathematicians"**, Friedrich-Schiller-Universität Jena
- 02/2013 **PhD symposium at the TU Chemnitz**, within the Fall school *Dirichlet forms, operator theory and mathematical physics*

Co-supervision

- 2016 **Franziska Sieron** (Master thesis), *The density of periodic configurations in strongly irreducible subshifts of finite type* (joint with Prof. Dr. Daniel Lenz)
- 2015 **Daniel Sell** (Master thesis), *Topological groupoids and Matuis spatial realization theorem* (joint with Prof. Dr. Daniel Lenz)
- 2014 **Franziska Sieron** (Bachelor thesis), *The balanced property of primitive substitutions* (joint with Prof. Dr. Daniel Lenz)

Talks at international conferences

- 10/2017 Workshop "Spectral Structures and Topological Methods in Mathematical Quasicrystals", MFO Oberwolfach (Germany): *Spectral stability of Schrödinger operators in the Hausdorff metric*
- 07/2017 Analysis and Geometry on Graphs and Manifolds, Universität-Potsdam (Germany): *Shnol type Theorem for the Agmon ground state*
- 05/2017 Israel Mathematical Union 2017, Acre (Israel): *The space of Delone dynamical systems and related objects*
- 01/2017 Workshop on Mathematical Physics, Weizmann Institute of Science, Rehovot (Israel), Poster: *Spectral Approximation of Schrödinger Operators*
- 07/2016 Seminar in Siegmundsburg (Germany): *Continuous variation of the spectra: A characterization and a tool*
- 06/2016 Thematic School "Transversal Aspects of Tilings", Oleron (France): *Continuity of the spectra associated with Schrödinger operators*
- 01/2016 Workshop on Spectral Geometry, Universität-Potsdam (Germany): *Operators over dynamical systems: The dependence of the spectrum with respect to the underlying geometry*
- 09/2015 CMO-BIRS, Workshop on "Spectral properties of quasicrystals via analysis, dynamics and geometric measure theory", Oaxaca (Mexiko): *Spectral approximation of Schrödinger operators: continuity of the spectrum*

- 07/2015 XVIIIth International Congress on Mathematical Physics, Santiago de Chile (Chile), Poster: *Spectral study of Schrödinger operators with aperiodic ordered potentials*
- 07/2015 Young researcher symposium, Pontificia Universidad Católica de Chile, Santiago de Chile (Chile): *Spectral study of Schrödinger operators with aperiodic ordered potential in one-dimensional systems*
- 06/2015 Workshop on "Time-frequency analysis and aperiodic order", Norwegian University of Science and Technology, Trondheim (Norway): *An approximation theorem for the spectrum of Schrödinger operators related to quasicrystals*
- 01/2015 Workshop on "Aperiodic order", University of Leicester (Great Britain): *The role of Gähler-Anderson-Putnam graphs in the view of Schrödinger operators*
- 10/2014 Workshop on "Dirichlet forms, operator theory and mathematical physics", Zarsis (Tunisia): *Ollivier-Ricci curvature and the spectrum of the normalized graph Laplace operator*
- 07/2014 Seminar in Siegmundsburg (Germany): *Periodic approximation of 1-dimensional Schrödinger operators*
- 10/2013 Fall school "Dirichlet forms, operator theory and mathematical physics", Technische Universität Chemnitz (Germany): *One-dimensional Schrödinger operators with aperiodic potential: The Fibonacci sequence*
- 07/2013 Seminar in Siegmundsburg (Germany): *Quasicrystals and the Floquet-Bloch theory*
- 12/2012 Workshop on "Dirichlet forms, operator theory and mathematical physics", Midoun (Tunisia): *Lebesgue measure zero spectrum for Jacobi matrices of quasicrystals*
- 09/2012 University of Saarbrücken, DMV Tagung (Germany): *Generalized Bloch theory for quasicrystals*

Talks in seminars and colloquia

- 10/2017 Pontificia Universidad Católica de Chile, Santiago (Chile): *Shnol type Theorem for the Agmon ground state*
- 10/2017 Pontificia Universidad Católica de Chile, Santiago (Chile): *Spectral approximation of Schrödinger operators*
- 10/2017 Hebrew University of Jerusalem (Israel): *When do the spectra of self-adjoint operators converge?*
- 08/2017 University of Oslo (Norway): *Spectral approximation via an approach from C^* -algebras*
- 07/2017 Friedrich-Alexander Universität Erlangen-Nürnberg (Germany): *The space of Delone dynamical systems and its application*
- 07/2017 RWTH Aachen (Germany): *Shnol type Theorem for the Agmon ground state*
- 05/2017 Friedrich-Schiller-Universität Jena (Germany): *The space of Delone dynamical systems and related objects*
- 05/2017 Friedrich-Schiller-Universität Jena (Germany): *Shnol type Theorem for the Agmon ground state*
- 03/2017 Aalborg University, Aalborg (Denmark), Seminar: *Spectral Approximation of Schrödinger Operators*
- 01/2017 Israel Institute of Technology (Technion), Haifa (Israel), PDE and Applied Mathematics Seminar: *Spectral Approximation of Schrödinger Operators*

- 12/2016 Israel Institute of Technology (Technion), Haifa (Israel), Groups, dynamics and related topics: *Existence of periodic elements: a topological point of view*
- 09/2016 Aalborg University (Denemark): *Continuous variation of the spectra: A characterization and a tool*
- 07/2016 Universität Bielefeld (Germany): *Hölder-continuous behavior of the spectra associated with self-adjoint operators*
- 04/2016 Universität Potsdam (Germany): *Continuous variation of the spectra: A characterization and a tool*
- 02/2016 Annual Meeting GRK 1523, Oppurg (Germany): *Schrödinger operators associated with dynamical systems*
- 01/2016 Friedrich-Schiller-Universität Jena (Germany): *Spectral Approximation of Schrödinger Operators: Continuous Behavior of the Spectra*
- 01/2016 Norwegian University of Science and Technology, Trondheim (Norway): *Spectral approximation of Schrödinger operators: continuous behavior of the spectra*
- 05/2015 Technische Universität Chemnitz (Germany): *Schrödinger operators on quasicrystals*
- 04/2015 Israel Institute of Technology (Technion), Haifa (Israel): *The role of Gähler-Anderson-Putnam graphs in the view of Schrödinger operators*
- 06/2014 Friedrich-Alexander Universität Erlangen-Nürnberg (Germany): *Gähler-Anderson-Putnam graphs of 1-dimensional Delone sets of finite local complexity*
- 04/2014 University of Alabama at Birmingham (USA): *Gähler-Anderson-Putnam graphs of 1-dimensional Delone sets of finite local complexity*
- 01/2014 Technische Universität Hamburg-Harburg (Germany): *Wannier transformation for Schrödinger operators with aperiodic potential*

Participations in international conferences

- 10/2015 Oberwolfach Arbeitsgemeinschaft, MFO Oberwolfach (Germany), "Mathematical quasicrystals"
- 08/2014 Erwin Schrödinger International Institute for Mathematical Physics, Vienna (Austria), Workshop on "Topological phases of quantum matter"
- 05/2013 Fernuniversität in Hagen, Hagen (Germany), Conference "Mathematical physics of disordered systems – A conference in honor of Leonid Pastur"
- 04/2012 CIRM, Marseille (France), Conference "Laminations and symbolic dynamics"

Language skills

- German (mother tongue)
- Englisch (fluent)
- Hebrew (basics)

Haifa, November 26, 2017

Siegfried Beckus