

Curriculum Vitae

Dr. rer. nat. habil. Siegfried Beckus

Personal Information

Birthday	April 11, 1988
Citizenship	German
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Academic Career

04/2026	Habilitation, Universität Potsdam, Germany Titel: <i>The Butterflies' effects</i>
2012–2016	PhD in Mathematics, Friedrich-Schiller-Universität Jena, Germany Titel: <i>Spectral approximation of aperiodic Schrödinger operators</i> Supervisors: Prof. Daniel Lenz, Prof. Jean Bellissard
2006–2012	Diploma in Mathematics, Friedrich-Schiller-Universität Jena, Germany Titel: <i>Generalized Bloch Theory for Quasicrystals</i> Supervisor: Prof. Daniel Lenz

Professional Experience

09/2025 – 06/2026	Fellowship for 10 months at the Israel Institute for Advanced Studies, Jerusalem, Israel
Since 10/2020	Senior Researcher with tenure, Universität Potsdam, Potsdam, Germany
10/2018 – 09/2020	Postdoctoral Researcher, Universität Potsdam, Potsdam, Germany
10/2016 – 09/2018	Postdoctoral Researcher, Fellowship, Israel Institute of Technology (Technion), Haifa, Israel
02/2014 – 04/2014	Student Research Internship (J1 Program), Georgia Institute of Technology, Atlanta, USA
03/2012 – 10/2016	PhD student, supervised by Prof. Daniel Lenz, Friedrich-Schiller-Universität Jena, Germany
08/2009 – 12/2009	Exchange semester, Faculty of Science, University of Joensuu, Finland
10/2006 – 02/2012	Diploma student in Mathematics, Friedrich-Schiller-Universität Jena, Germany

Third-Party Funded Projects

03/2022	Maria-Weber-Grant , <i>Aperiodic order: Decoding hidden structures</i> , Teaching buyout fellowship for junior professors and habilitation candidates, PhD position for 1 Jahr
11/2022	COST (European Cooperation in Science & Technology) , Action CA18232, Financial support for the summer school in August 2023, joint application with Ram Band
11/2018	German Science Foundation Research Grant (DFG) (BE 6789/1-1), <i>Periodic approximations of Schrödinger operators associated with quasicrystals</i> (PostDoc position for 2 years and travel funds)

Scholarships and Project Funding

03/2025	“Research in Pairs” with Ulrik Enstad and Jordy van Velthoven at the Mathematisches Forschungsinstitut Oberwolfach (MFO), Germany
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07/2020	ZiF Summer Camp 2020, Research stay at the Center of Interdisciplinary Research at the university of Bielefeld, Bielefeld, Germany
07/2019	DAAD Scholarship (Travel Grant Program for Conference Participation): International Workshop on Operator Theory and its Applications 2019, Lissabon, Portugal
01/2018	“Research in Pairs” with Jean Bellissard and Giuseppe De Nittis at the Mathematisches Forschungsinstitut Oberwolfach (MFO), Germany
10/2016	PostDoc Fellowship, Israel Institute of Technology (Technion), Haifa, Israel
07/2015	DAAD Scholarship (Travel Grant Program for Conference Participation): XVIII International Congress on Mathematical Physics, Santiago de Chile, Chile
03/2013 – 09/2016	PhD Seminar, "Förderung von interdisziplinären Arbeitsgruppen und Nachwuchsnetzwerken" supported by the Graduierten-Akademie in Jena, Germany

Academic Service and Committees

2026 – 2029	Member, DAAD Selection Panel
Since 2017	Reviewer for Journals: Advances in Mathematics, Annales Henri Poincaré, Documenta Mathematica, Ergodic Theory and Dynamical Systems, Israel Journal of Mathematics, International Mathematics Research Notices, Journal d'Analyse Mathématique, Journal Mathematical Reports, Journal of Mathematical Physics, Journal of Spectral Theory, Linear Algebra and Its Applications, Zeitschrift für Analysis und ihre Anwendungen Reviewer for Scientific Organizations: German Academic Exchange Service (DAAD)
Since 2019	Outreach Activities: Co-organization of the Mathematical Olympiad; coordination of student lectures for schools

Organization of Scientific Conferences and Reports

2019 – 2025	Euler-Lecture , Universität Potsdam, Germany
03/2025	Workshop , <i>Functional Analysis, Operator Theory and Dynamical Systems</i> , Friedrich-Schiller-Universität Jena, Germany
08/2023	Summer school , <i>Spectral theory and geometry of ergodic Schrödinger operators</i> , University of Potsdam, Germany
09/2022	Workshop , <i>Functional Analysis, Operator Theory and Dynamical Systems</i> , University of Potsdam, Germany
01/2021	MFO reporter for the Workshop <i>Geometry, Dynamics and Spectrum of Operators on Discrete Spaces</i> , MFO Oberwolfach, Germany
2013 – 2016	PhD Seminar , Friedrich-Schiller-Universität Jena, Germany
2013 – 2015	Colloquium , <i>Job opportunities for mathematicians</i> , Friedrich-Schiller-Universität Jena, Germany
02/2013	Doctoral Symposium , TU Chemnitz (Winter School), <i>Dirichlet forms, operator theory and mathematical physics</i>

List of Publications

Authors	Title	Reference	Year
Ram Band, Siegfried Beckus	<i>From quasiperiodicity to a complete coloring of the Kohmoto butterfly</i>	Europhysics Letters, DOI 10.1209/0295-5075/ae59af	2026
Siegfried Beckus, Jean Bellissard, Yannik Thomas	<i>Spectral regularity and defects for the Kohmoto model</i>	Ann. Henri Poincaré, DOI 10.1007/s00023-025-01578-8	2025
Siegfried Beckus, Alberto Takase	<i>Spectral estimates of dynamically-defined and amenable operator families</i>	J. Spectr. Theory 15 , no. 2, 563 – 610, DOI 10.4171/JST/554	2025
Ram Band, Siegfried Beckus, Barak Biber, Laurent Raymond, Yannik Thomas	<i>A review of a work by Raymond: Sturmian Hamiltonians with a large coupling constant - periodic approximations and gap labels</i>	Proceedings “CA18232: Mathematical models for interacting dynamics on networks”, DOI 10.1007/978-3-032-02326-1_1	2026
Ram Band, Siegfried Beckus, Felix Pogorzelski, Lior Tenenbaum	<i>Spectral approximation for substitution systems</i>	Journal d’Analyse Mathématique, DOI 10.1007/s11854-026-0445-0	2026
Siegfried Beckus, Tobias Hartnick, Felix Pogorzelski	<i>Linear repetitivity beyond Abelian groups</i>	Ergodic Theory Dynam. Systems 45, no. 7, 1947 – 1997, DOI 10.1017/etds.2024.120	2025
Siegfried Beckus, Baptiste Devyver	<i>Generalized eigenfunctions and eigenvalues: a unifying framework for Shnol-type theorems</i>	J. Anal. Math. 146, no. 1, 165 – 203, DOI 10.1007/s11854-021-0191-2	2022
Siegfried Beckus, Latif Eliaz	<i>Growth of Eigenfunctions and R-limits on Graphs</i>	J. Spectr. Theory 11, no. 4, 1895 – 1933, DOI 10.4171/JST/389	2021
Siegfried Beckus, Jean Bellissard, Giuseppe de Nittis	<i>Spectral continuity for aperiodic quantum systems: applications of a folklore theorem</i>	J. Math. Phys. 61, no. 12, 123505, 19 pp, DOI 10.1063/5.0011488	2020
Siegfried Beckus, Yehuda Pinchover	<i>Shnol-type theorem for the Agmon ground state</i>	J. of Spectr. Theory, 10 , no. 2, 355 – 377, DOI 10.4171/JST/296	2020
Siegfried Beckus, Felix Pogorzelski	<i>Delone dynamical systems and spectral convergence</i>	Ergodic Theory Dynam. Systems, 40 , no. 6, 1510 – 1544, DOI 10.1017/etds.2018.116	2020
Siegfried Beckus, Jean Bellissard, Horia Cornean	<i>Hölder Continuity of the Spectra for Aperiodic Hamiltonians</i>	Ann. Henri Poincaré, 20 , no. 11, 3603 – 3631, DOI 10.1007/s00023-019-00848-6	2019

Siegfried Beckus, Jean Bellissard, Giuseppe de Nittis	<i>Corrigendum to: "Spectral continuity for aperiodic quantum systems I. General Theory"</i>	J. of Funct. Anal., 277 , no. 9, 2251 – 2252, DOI 10.1016/j.jfa.2019.06.001	2019
Siegfried Beckus,, Jean Bellissard, Giuseppe de Nittis	<i>Spectral continuity for aperiodic quantum systems, I. General theory</i>	J. of Funct. Anal., 275 , no.11, 2917 – 2977, DOI 10.1016/j.jfa.2018.09.004	2018
Siegfried Beckus, Daniel Lenz, Marko Lindner, Christian Seifert	<i>On the spectrum of operator families on discrete groups over minimal dynamical Systems</i>	Math. Z., 287 , 993 – 1007, DOI 10.1007/s00209-017-1856-5	2017
Siegfried Beckus, Jean Bellissard	<i>Continuity of the spectrum of a field of self-adjoint operators</i>	Ann. Henri Poincaré, 17 , no. 12, 3425 – 3442, DOI 10.1007/s00023-016-0496-3	2016
Siegfried Beckus, Daniel Lenz, Marko Lindner, Christian Seifert	<i>Note on spectra of non-selfadjoint operators over dynamical system</i>	Proc. Edinburgh Math. Soc., 61 , no. 2, 371 – 386, DOI 10.1017/S0013091517000086	2018
Siegfried Beckus, Felix Pogorzelski	<i>Spectrum of Lebesgue measure zero for Jacobi operators of quasicrystals</i>	Math. Phys. Anal. Geom. 16 , no. 3, 289 – 308, DOI 10.1007/s11040-013-9131-4	2013

List of Preprints

Authors	Title	Reference	Year
Ram Band, Siegfried Beckus, Raphael Loewy	<i>Complete hierarchical structure of the spectral bands in the Kohmoto model</i>	arXiv:2607.06361	2026
Ram Band, Siegfried Beckus, Felix Pogorzelski, Lior Tenenbaum	<i>Spectral pollution in substitution systems</i>	arXiv:2604.12637	2026
Ram Band, Siegfried Beckus, Raphael Loewy	<i>The Dry Ten Martini Problem for Sturmian Hamiltonians</i>	arXiv:2402.16703	2024
Siegfried Beckus, Tobias Hartnick, Felix Pogorzelski	<i>Symbolic substitution systems beyond abelian groups</i>	arXiv:2109.15210	2021

Supervision of PhD Theses

Since 2023	Yannik Thomas at the University of Potsdam
2020 – 2025	Lior Tenenbaum (cosupervised with Ram Band) at the Israel Institute of Technology
2020 – 2022	Alberto Takase (cosupervised with Anton Gorodetski) at the University of California, Irvine

Supervision of Bachelor's and Master's Theses

2025	Jacobbo García Castiblanco, Bachelor thesis, <i>Diskreter periodischer Schrödinger-Operator auf $\mathbb{Z}^d$ und sein Spektrum</i>
2025	Angelique Stege, Master thesis (Education), <i>Das Wythoff-Spiel und der Satz von Beatty</i>
2023	Yannik Thomas, Master thesis, <i>Non-Euclidean Estimates for Sturmian Hamiltonians</i>
2020	Matti Richter, Bachelor thesis, <i>Harmonic Functions on Graphs with Group Actions</i> (cosupervised with Matthias Keller)
2016	Franziska Sieron, Master thesis, <i>The density of periodic configurations in strongly irreducible subshifts of finite type</i> (cosupervised with Daniel Lenz)
2015	Daniel Sell, Master thesis, <i>Topological groupoids and Matuis spatial realization theorem</i> (cosupervised with Daniel Lenz)
2014	Franziska Sieron, Bachelor thesis, <i>The balanced property of primitive substitutions</i> (cosupervised with Daniel Lenz)

Selected Talks at Conferences and Workshops

07/2024	XXI International Congress on Mathematical Physics, Strasbourg (France)	<i>The Dry Ten Martini Problem for Sturmian Schrödinger Operators</i>
05/2024	Workshop “Point sets Dynamics, Sampling, and Operator Algebras“, University of Oslo (Norway)	<i>Spectral convergence rates and the underlying dynamics</i>
08/2023	Workshop “Aspects of Aperiodic Order“, MFO Oberwolfach (Germany)	<i>The Dry Ten Martini problem for Sturmian dynamical systems</i>
06/2022	Workshop “Ergodic Operators and Quantum Graphs“, Simons Center for Geometry and Physics (USA)	<i>Spectral approximations beyond dimension one</i>
04/2022	Workshop “Almost-Periodic Spectral Problems“, Banff International Research Station (Canada)	<i>The table and the chair Spectral approximations beyond dimension one</i>
01/2021	Workshop “Geometry, Dynamics and Spectrum of Operators on Discrete Spaces“, MFO Oberwolfach (Deutschland)	<i>Primitive substitutions beyond abelian groups The Heisenberg group</i>
07/2019	International Workshop on Operator Theory and its Applications (IWOTA 2019), Instituto Superior Técnico, Lisbon (Portugal)	<i>Hunting the spectra via the underlying dynamics</i>
10/2017	Workshop “Spectral Structures and Topological Methods in Mathematical Quasicrystals“, MFO Oberwolfach (Germany)	<i>Spectral stability of Schrödinger operators in the Hausdorff metric</i>
05/2017	Israel Mathematical Union 2017, Acre (Israel)	<i>The space of Delone dynamical systems and related objects</i>
01/2017	Workshop on Mathematical Physics, Weizmann Institute of Science, Rehovot (Israel), Poster	<i>Spectral Approximation of Schrödinger Operators</i>
06/2016	Thematic School “Transversal Aspects of Tilings“, Oleron (France)	<i>Continuity of the spectra associated with Schrödinger operators</i>

01/2016	Workshop on Spectral Geometry, Universität-Potsdam (Germany)	<i>Operators over dynamical systems The dependence of the spectrum with respect to the underlying geo- metry</i>
09/2015	CMO-BIRS, Workshop on “Spectral properties of quasicrystals via analysis, dynamics and geometric measure theory“, Oaxaca (Mexico)	<i>Spectral approximation of Schrödin- ger operators continuity of the spec- trum</i>
07/2015	XVIIIth International Congress on Mathematical Physics, Santiago de Chile (Chile), Poster	<i>Spectral study of Schrödinger opera- tors with aperiodic ordered potenti- als</i>
07/2015	Young researcher symposium, Pontificia Universidad Catolica de Chile, Santiago de Chile (Chile)	<i>Spectral study of Schrödinger opera- tors with aperiodic ordered potential in one-dimensional systems</i>
06/2015	Workshop on “Time-frequency analysis and aperiodic order“, Norwegian University of Science and Technology, Trondheim (Norway)	<i>An approximation theorem for the spectrum of Schrödinger operators related to quasicrystals</i>
01/2015	Workshop on “Aperiodic order“, University of Leicester (Great Britain)	<i>The role of Gähler-Anderson- Putnam graphs in the view of Schrödinger operators</i>
10/2013	Fall school “Dirichlet forms, operator theory and mathematical physics“, Technische Universität Chemnitz (Germany)	<i>One-dimensional Schrödinger ope- rators with aperiodic potential The Fibonacci sequence</i>
12/2012	Workshop on “Dirichlet forms, operator theory and mathematical physics“, Midoun (Tunisia)	<i>Lebesgue measure zero spectrum for Jacobi matrices of quasicrystals</i>
09/2012	University of Saarbrücken, DMV Tagung (Germany)	<i>Generalized Bloch theory for quasi- crystals</i>

Selected Talks at Seminars

05/2025	Berlin, What is ... ? Seminar (Germany)	<i>What is a dynamical system?</i>
04/2025	Université Claude Bernard Lyon 1 (France)	<i>Dry Ten Martini Problem for Stur- mian Schrödinger operators</i>
10/2024	University of Glasgow (Great Britain)	<i>Dry Ten Martini Problem for Stur- mian Dynamical Systems</i>
12/2023	Universität Bielefeld (Germany)	<i>The table and the chair Spectral ap- proximations beyond dimension one</i>
04/2023	Universität Münster (Germany)	<i>Dry Ten Martini Problem for Stur- mian Dynamical Systems</i>
03/2023	Institute Foruier - Grenoble (France)	<i>Dry Ten Martini Problem for Stur- mian Dynamical Systems</i>
04/2022	University of California - Irvine (USA)	<i>Sturmian dynamical systems and the Kohmoto butterfly</i>
01/2020	Universität Leipzig (Deutschland)	<i>When do the spectra of self-adjoint operators converge?</i>
05/2019	Justus-Liebig-Universität Gießen (Germany)	<i>Hunting the spectra via the underly- ing dynamics</i>
07/2018	Technische Universität München (Germany)	<i>When do the spectra of self-adjoint operators converge?</i>

10/2017	Pontificia Universidad Catolica de Chile, Santiago (Chile)	<i>Shnol type Theorem for the Agmon ground state</i>
10/2017	Pontificia Universidad Catolica de Chile, Santiago (Chile)	<i>Spectral approximation of Schrödinger operators</i>
10/2017	Hebrew University of Jerusalem (Israel)	<i>When do the spectra of self-adjoint operators converge?</i>
08/2017	University of Oslo (Norway)	<i>Spectral approximation via an ap- proach from C^*-algebras</i>
07/2017	Friedrich-Alexander Universität Erlangen-Nürnberg (Germany)	<i>The space of Delone dynamical sys- tems and its application</i>
07/2017	RWTH Aachen (Germany)	<i>Shnol type Theorem for the Agmon ground state</i>
03/2017	Aalborg University, Aalborg (Denmark), Seminar	<i>Spectral Approximation of Schrödinger Operators</i>
12/2016	Israel Institute of Technology (Technion), Haifa (Israel)	<i>Existence of periodic elements a to- pological point of view</i>
09/2016	Aalborg University (Danemark)	<i>Continuous variation of the spectra A characterization and a tool</i>
07/2016	Universität Bielefeld (Germany)	<i>Hölder-continuous behavior of the spectra associated with self-adjoint operators</i>
01/2016	Norwegian University of Science and Technology, Trondheim (Norway)	<i>Spectral approximation of Schrödinger operators: Continuous behavior of the spectra</i>
05/2015	Technische Universität Chemnitz (Germany)	<i>Schrödinger operators on quasicry- stals</i>
04/2015	Israel Institute of Technology (Technion), Haifa (Israel)	<i>The role of Gähler-Anderson- Putnam graphs in the view of Schrödinger operators</i>
04/2014	University of Alabama at Birmingham (USA)	<i>Gähler-Anderson-Putnam graphs of 1-dimensional Delone sets of finite local complexity</i>