

# Curriculum Vitæ

## Claudius B. Zibrowius

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**Website** <https://cbz20.raspberrypi.com/>  
**Personal** Born May, 1990, in Berlin, Germany; German Citizen

### Academic career

Sep 2020 – present **Postdoctoral Research Fellow** at the University of Regensburg, DE  
member of the research group of Dr L. Lewark

Jul 2018 – Jun 2020 **Postdoctoral Research and Teaching Fellow** at UBC, CA  
member of the research group of Dr L. T. Watson

Aug 2017 – Jun 2018 **CIRGET Postdoctoral Student** at the Université de Sherbrooke, CA  
member of the research group of Dr L. T. Watson

Jan 2017 – Jun 2017 **Postdoctoral Visitor** at the Isaac Newton Institute, University of  
Cambridge, UK

Oct 2013 – May 2017 **PhD studies** at DPMMS, University of Cambridge, UK  
PhD thesis: On a Heegaard Floer theory for tangles  
supervisor: Dr J. A. Rasmussen

Oct 2012 – Jul 2013 **Part III of the Mathematical Tripos**  
Trinity Hall, University of Cambridge, UK  
Essay: Khovanov stable homotopy, supervisor: Dr J. A. Rasmussen  
Master of Advanced Studies (MASt) with distinction (six  $\alpha$  grades)

Apr 2010 – Jun 2012 **Undergraduate studies** in mathematics (major) and physics (minor)  
University of Duisburg-Essen, Campus Essen, DE  
Bachelor's thesis: On the Milnor fibration, supervisor: Prof. G. Hein  
Bachelor's degree (BSc) with distinction (1.0)

### Publications

**Kotelskiy, Watson, Z. — Khovanov homology and strong inversions**

to appear in The Open Book Series [↗](#), 16 pages (arXiv: 2104.13592)

**Lidman, Moore, Z. — L-space knots have no essential Conway spheres**

to appear in Geometry & Topology [↗](#), 25 pages (arXiv: 2006.03521)

**Z. — On symmetries of peculiar modules; or,  $\delta$ -graded link Floer homology is mutation invariant**

to appear in Journal of the EMS [↗](#), 47 pages (arXiv: 1909.04267)

**Lewark, Z. — Rasmussen invariants**

Mathematical Research Postcards 1.2 (2021) [↗](#)

### **Z. — Peculiar modules for 4-ended tangles**

Journal of Topology 13.1 (2020), 77–158 [↗](#)

### **Z. — Kauffman states and Heegaard diagrams for tangles**

Algebraic & Geometric Topology 19.5 (2019), 2233–2282 [↗](#)

## **Preprints**

### **Kotelskiy, Lidman, Moore, Watson, Z. — Cosmetic operations and Khovanov multicurves**

20 pages, arXiv: 2109.14049, submitted for peer-review

### **Kotelskiy, Watson, Z. — Thin links and Conway spheres**

82 pages, arXiv: 2105.06308, submitted for peer-review

### **Kotelskiy, Watson, Z. — Immersed curves in Khovanov homology**

95 pages, arXiv: 1910.14584, submitted for peer-review

### **Kotelskiy, Watson, Z. — Khovanov invariants via Fukaya categories: the tangle invariants agree**

14 pages, arXiv: 2004.01619, submitted for peer-review

### **Kotelskiy, Watson, Z. — A mnemonic for the Lipshitz-Ozsváth-Thurston correspondence**

13 pages, arXiv: 2005.02792, submitted for peer-review

## **Programming**

**kht++**, a C++ program for computing Khovanov invariants of links and tangles.

This program supersedes the python program KhT below. Available via a dedicated website [↗](#)

**KhT** (joint with G. Chhina), a python program for computing Bar-Natan homology of tangles and the corresponding immersed curves for 4-ended tangles. Available on github [↗](#)

**PQM.m**, a Mathematica package for computing peculiar modules and the corresponding immersed curves for 4-ended tangles. Available on my website [↗](#)

**BSFH.m**, a Mathematica package for computing R. Zarev's bordered sutured Floer homology from nice diagrams, available on my website [↗](#)

**APT.m**, a Mathematica package for computing Alexander polynomials for tangles. Available on my website [↗](#)

## **Invited conference talks and lectures**

August 2022 **Frontiers in Geometry and Topology**, ICTP, Trieste, IT

December 2021 **Winter Meeting of the Canadian Mathematical Society**, CA/online

June 2021 **Richmond Geometry Festival**, VCU, US/online

June 2021 **Nearly Carbon Neutral Geometry and Topology Conference**, US/online, (video link [↗](#))

- June 2021 **Summer Meeting of the Canadian Mathematical Society**, CA/online
- January 2021 **Floer homology in low-dimensional topology**, Simons Center for Geometry and Physics, Stony Brook, US/online. (video link [↗](#))
- August 2019 **Lecture series: Immersed curves in Khovanov homology** at the summer school **Current Progress in Low Dimensions**, Université du Québec à Montréal, CA. (lecture notes [↗](#))
- March 2019 **Sectional Meeting of the American Mathematical Society**, University of Hawai'i at Mānoa, US
- June 2017 **Low-dimensional topology on Skye**, Sabhal Mòr Ostaig, UK
- May 2017 **Homology theories in low dimensional topology**, Isaac Newton Institute, University of Cambridge, UK. (video link [↗](#))

### Invited seminar talks

- June 2021 **Higher Invariants Oberseminar**, Regensburg, DE.
- July 2020 **Low-Dimensional Geometry and Topology Seminar**, Regensburg, DE. (video link [↗](#))
- May 2020 **Trends in Low-Dimensional Topology**, Boston, US. (video link [↗](#))
- April 2020 **Topology Seminar**, Durham, UK
- April 2020 **Topology Seminar**, Glasgow, UK
- February 2020 **Triangle Topology Seminar**, Duke, US
- February 2020 **Geometry Seminar**, UGA, US
- November 2019 **Geometry and Topology Seminar**, VCU, US
- April 2019 **Joint Los Angeles Topology Seminar**, Caltech, US
- February 2019 **Topology Seminar**, Indiana University Bloomington, US
- November 2018 **Geometry and Topology Seminar**, University of Oregon, US
- March 2018 **Geometry and Topology Seminar**, UC Davis, US
- November 2017 **Topology Seminar**, Princeton University, US
- November 2017 **Topology Seminar**, UCLA, US
- October 2017 **Geometry and Topology Seminar**, Université du Québec à Montréal, CA
- July 2015 **Geometry and Topology Seminar**, University of Glasgow, UK

### Services to the mathematical community

- August 2021 **Co-organizer** of the SFB workshop and conference **Perspectives on quantum link homology theories**, Regensburg, DE. (conference website [↗](#))
- December 2018 **Co-organizer** of the topology session of the **CMS winter meeting**
- May 2018 **Principal organizer** of the ISM discovery school and CIRGET conference **Perspectives on bordered Heegaard Floer theory**, Université du Québec à Montréal, CA. (conference website [↗](#))

- since 2018 **Referee** for the Canadian Journal of Mathematics, Journal of Topology, and Quantum Topology
- 2014 – 2015 **Organizer** of the student-run DPMMS seminar Geometry Tea

### Scholarships and distinctions

- November 2019 **Finalist** representing the UBC Department of Mathematics in the **Killam Postdoctoral Fellow Research Prize Competition 2019**
- Oct 2016 – Dec 2016 **Research studentship** from the Cambridge Philosophical Society
- April 2015 **Smith-Rayleigh and Knight-Rayleigh Prize Essay**, Group 2,  
Essay title: On a polynomial Alexander invariant for tangles
- Oct 2013 – Sep 2016 **EPSRC studentship** for PhD studies (fees)
- Oct 2013 – Sep 2016 **Department grant** for PhD studies (maintenance)
- June 2013 **Bateman Scholarship** from Trinity Hall
- Oct 2012 – Jun 2013 **Graduate Scholarship** from the German Academic Exchange Service
- Oct 2010 – Sep 2011 **NRW Scholarship** of the University of Duisburg-Essen

### Teaching

- Winter 2021 **Lecturer** for Elementargeometrie für Lehramt (ca. 40 students)
- Summer/Fall 2021 **Supervision of a Master's thesis** (joint with Lukas Lewark)
- Spring 2019/2020 **Lecturer** for MATH 101:201 Integral Calculus with Applications to Physical Sciences and Engineering (ca. 150 students)
- Winter 2019/2020 **Lecturer** for MATH 100:108 Differential Calculus with Applications to Physical Sciences and Engineering (ca. 120 students)
- Summer 2019 **Supervisor of an undergraduate summer research project** for writing the python program KhT (see **Programming**)
- Spring 2018/2019 **Lecturer** for MATH 101:207 Integral Calculus with Applications to Physical Sciences and Engineering (ca. 90 students)
- Winter 2018/2019 **Lecturer** for MATH 100:102 Differential Calculus with Applications to Physical Sciences and Engineering (ca. 100 students)
- Hiver 2017/2018 **Lecturer** for MAT 623/MAT 813 Topologie Algébrique (5 students)
- Lent 2017 **Supervisor** for the Part Ib course Geometry
- Michaelmas 2016 **Interviewer** for undergraduate admissions in economics at Trinity Hall
- Lent 2015 **Supervisor** for the Part III course Homotopy Theory
- Michaelmas 2014 **Interviewer** for undergraduate admissions in mathematics at Trinity Hall
- Michaelmas 2013–16 **Supervisor** for the Part II course Algebraic Topology
- Oct 2011 – Jul 2012 **Student assistant** for the courses Linear Algebra I and II
- Jan 2012 – Jul 2012 **Leader of a mathematical study group for pupils (Schülerzirkel)** at the University of Duisburg-Essen

## **Languages**

German (native), English (fluent), French (intermediate), Latin (Latinum certificate)

Mathematica, python, C++