

Curriculum Vitae

Jens Harlander

Department of Mathematics

Boise State University, 1910 University Drive, Boise, ID 83725-1555
e-mail:jensharlander@boisestate.edu, web: math.boisestate.edu/~jharlander
phone:208.426.3312

Education

1986-1992:

University of Oregon; MS Mathematics 1987, Ph.D. Mathematics, 1992.

1982-1986:

Universität Tübingen; Vordiplom in Mathematics and Physics, 1985.

Employment History

2010-present:

Associate Professor at Boise State University

2007-2010:

Assistant Professor at Boise State University

2005-2007:

Associate Professor at Western Kentucky University

2003-2005:

Assistant Professor at Western Kentucky University

2002-2003:

Visiting Assistant Professor at Portland State University.

2001-2002:

Visiting Assistant Professor at Oregon State University.

1995-2001:

C1-Assistant Professor at the University of Frankfurt.

1994-1995:

Research Fellow at the University of Glasgow, Scotland (financed through a research grant from the Deutsche Forschungsgemeinschaft DFG).

1992-1994:

Post-Doc at the University of Frankfurt, Germany.

1987-1992:

Graduate Teaching Fellow at the University of Oregon.

Grants, Fellowships, Awards

2009: Awarded NSF grant DMS-0918418 to finance the “International Seminar on Low Dimensional Homotopy Theory and Combinatorial Group Theory”, July 12-21, Wallowa Lake Lodge, Joseph, OR. The PI for this project was Rudolf Beyl, Portland State University, I acted as the Co-PI.

1997-1998: Joint DAAD/NSF Grant for research on *Geometric, Metric and Homotopical Aspects of Low Dimensional Cell-Complexes and Manifolds*. Participating researchers included Dyer, Sieradski (University of Oregon), Bogley (Oregon State University), Beyl, Latiolais, Waller (Portland State University), Harlander, Hog-Angeloni, Metzler (Frankfurt).

1996-2001: Participant in the ongoing project “Niedrigdimensionale Topologie und geometrisch-topologische Methoden in der Gruppentheorie” funded by the DFG (Sachbeihilfe Zi 218/3-2 plus Fortsetzung).

1995: Research grant from the Volkswagen Stiftung to participate in the Research in Pairs (RiP)-program. During 08/06/1995-08/19/1995 stay at the Oberwolfach Institute to conduct research with S. J. Pride on the geometry of group extensions.

1994: Research Grant from the Deutsche Forschungsgemeinschaft. Research with Prof.S. Pride at Glasgow University.

1986: Accepted to the Foreign Exchange Program of the Universität Tübingen. Awarded a one year Graduate Stipend to study at the University of Oregon.

1982: Physics-Award from the Max-Planck-High School in Heidenheim, Germany.

Teaching: Courses, seminars, supervision

Courses at BSU

Fall 2007: Math 170 (Calculus I), Math 175 (Calculus II)

Spring 2008: Math 175 (Calculus II), Math 305 (Abstract Algebra)

Fall 2008: Math 175 (Calculus II), Math 414/514 (Advanced Calculus)
Spring 2009: Math 275 (Vector Calculus), Math 512 (Advanced Topology)
Fall 2009: Math 170 (Calculus I), Math 405/505 (Abstract Algebra)
Spring 2010: Math 333 (Differential Equations), Math 506 (Advanced Algebra)
Fall 2010: Math 170 (Calculus I), Math 411/511 (Introduction to Topology)
Spring 2011: Math 175 (Calculus II), Math 512 (Advanced Topology)

Courses at WKU:

Fall 2003: MTH 109 General Mathematics, MTH 117 Trigonometry, MTH 310 Discrete Mathematics
Spring 2004: MTH 109 General Mathematics, MTH 122 Calculus I, MTH 310 Discrete Mathematics
Fall 2004: MTH 109 General Mathematics, MTH 122 Calculus I, MTH 439 Topology I (Point Set Topology)
Spring 2005: MTH 109 General Mathematics (two sections), MTH 439 Topology II (Algebraic Topology)
Fall 2005: MTH 109 General Mathematics, MTH 132 Calculus II, MTH 317 Abstract Algebra
Spring 2006: MTH 109 General Mathematics, MTH 417 Abstract Algebra II
Fall 2006: MTH H 126 (Honors Calculus I), MTH 227 (Calculus II)

Masters Theses at BSU

“Combinatorics and Geometry of Gauss Codes and Virtual Knots”, Ross Bailey (graduated Spring 2010).

“Stably-Free Non-Free Modules for the Klein Bottle Group”, Andrew Misseldine (graduated Spring 2010).

Both Ross Bailey and Andrew Misseldine were awarded a summer research grant from the mathematics department for the summer 2009.

“A generalization of Cohn’s theorem ”, Nick Davidson (ongoing, graduation date is Spring 2011).

Directed Senior Research Projects WKU:

“The Ends of Graphs and Groups” Krisztian Trestyanszki, Spring 2004
“Finiteness Properties over Polynomial Rings”, Michael Depersio, Spring 2006

Courses at Portland State:

Winter 2003: MTH 256 Applied Differential Equations, MTH 243 Introduction to Probability and Statistics

Spring 2003: MTH 251 Calculus I, MTH 545 Geometric Group Theory

Courses at Oregon State:

Fall 2001: MTH 256 Applied Differential Equations, MTH 634 Algebraic Topology

Winter 2002: MTH 251 Calculus, MTH 635 Algebraic Topology

Spring 2002: MTH 342 Linear Algebra, MTH 636 Algebraic Topology/Geometric Group Theory

Courses at the University of Oregon:

As a GTF I taught all calculus sections, lower division algebra, trigonometry, statistics for business majors

Graduate lecture courses at Uni Frankfurt:

Geometric group theory (Winter 98/99)

Cohomology of groups (Summer 99)

Combinatorial group theory (Summer 2000)

Groups and graphs (Winter 2000/2001)

Algebraic topology (Summer 2001)

Student seminars at Uni Frankfurt:

Geometry and groups (Summer 96)

Geometric group theory (Winter 96/97)

Coxeter-groups (Summer 97)

Non-positive curvature and Coxeter-groups (Winter 97/98)

JSJ-decompositions of groups (Summer 98)

Groups acting on trees and squared complexes (Summer 99)

Hyperbolic groups (Summer 00)

Automatic groups (Winter 00/01)

Co-supervision of the following diploma theses at Frankfurt University:

Sigma invariants for 1-relator groups acting on the hyperbolic plane (Alexander Lobeck, 2004)

Lattices in products of trees (Christian Hüsing 2000)

Injektivitäts und Surjektivitäts-Tests für lokal indizierbare Gruppen (Lucy Mashonga 2000)
Homotopie-Klassifikation von 2-Komplexen mit frei abelscher Fundamentalgruppe (Can Yurthoven 1999)
Die Whitehead Eilenberg-Ganea Alternative (M. Storch 1998)
Cohomologie von Coxetergruppen (U. Weil 1997)
Erzeugende Identitäten für Symmetrische Gruppen (F. Degenhardt 1996)
Ein algebraisierter Biasbegriff (B. Michalik 1993)

Service

Boise State University

Fall 2010: Math Majors Committee, Calculus Committee, Graduate Student Advisor.

Continuing work on a future REU program (see below).

Spring 2010: Math Majors Committee, Hiring Committees (Set Theory, Interdisciplinary Pure Mathematics), Putnam coach (The Putnam is a national mathematics competition).

Fall 2009: Math Majors Committee, Hiring Committees (Set Theory, Interdisciplinary Pure Mathematics), PR Representative for the Mathematics Department, Putnam coach.

Work on establishing an REU program in mathematics at BSU. If The NSF grant application is work in progress, the PI for this project is Liljana Babinkostova, I act as Co-PI.

Ongoing involvement with the International Program at BSU and PH Karlsruhe. An agreement of cooperation between the two schools was signed May 21, 2008.

Spring 2009: Math Majors Committee, PR Representative for the Mathematics Department.

Fall 2008: Math Majors Committee, PR Representative for the Mathematics Department.

Spring 2008: Math Majors Committee, PR Representative for the Mathematics Department.

Fall 2007: Math Majors Committee, PR Representative for the Mathematics Department.

Referee work for mathematics journals.

Western Kentucky University:

Spring 2003: General Faculty Hiring Committee.

Fall 2004: University committee for implementing a January term at WKU.

Spring 2005: Dept. Head hiring committee. Building committee. Organizer of a Special Session at the AMS Spring Meeting in March 2005 at WKU.

Fall 2005: Fall Symposium committee.

Spring 2006: General Faculty Search committee, Dept. Head Search committee, WKU Senator.

Fall 2006: Graduate Studies Committee, Colloquium Committee, Fall Symposium Committee, WKU Senator

Spring 2007: Director of Graduate Studies, WKU Senator

University of Frankfurt:

During 1999-2001 member of the Fachbereichsrat (elected departmental committee) of the mathematics department.

During 1995-2001 Organizer (with Martin Lustig and Richard Weidmann, Bochum) of the Quarterly Geometric Group Theory meeting in Frankfurt

Research Interests and Projects

Low Dimensional Topology, Geometric Group Theory, Topological and Homological Group Theory.

Ongoing research on Whitehead's asphericity conjecture, Wall's domination question in dimension 2, the relation gap problem in combinatorial group theory, homotopy classification of 2-complexes, finiteness properties of groups, in particular the F_n -conjecture for metabelian groups.

Coauthors: Young Baik, Robert Bieri, William Bogley, Jaqueline Jensen, Dessislava Kochloukova, Holger Meinert, Andrew Misseldine, Stephen Pride, Stephan Rosebrock.

Conferences, Visits, Invited Talks

Aug.6-Aug.19 1995: Mathematisches Forschungsinstitut Oberwolfach, as part of the RiP-program supported by the Volkswagen Stiftung. Joint research with S.J. Pride on the geometry of group extensions.

Dec.3-Dec.9 1995: Oberwolfach conference on topological methods in group theory. Talk on embedding groups into efficient groups.

Aug.15-Aug.25 1996: International Summer Conference at Cheljabinsk University(Russia) on low dimensional topology and combinatorial group theory, organized by Sergej Matveev. Survey talk on the efficiency of groups.

Feb.9-Mar.3 1997: Glasgow University (invited by Stephen Pride). Talks in Glasgow (Feb.12), St. Andrews (Feb.20) and QMW London (Feb.27) on embeddings into efficient groups and cohomological dimension of automorphism groups of buildings.

Mar.10-Mar.17 1997: Stockholm University (invited by Juan Alonso).

July 26-Aug.3 1997: Groups St. Andrews in Bath. Talk on the cohomological dimension of groups acting on buildings.

Sept.15-Oct.10 1997: University of Oregon, as part of the DAAD-NSF project mentioned above. Talks at Eugene(UO), Corvallis(OSU) and Portland(PSU) on Morse-theory in connection with 2-dimensional groups (the outcome of a visit of N. Brady to Frankfurt).

Mar.10-Mar.19 1998: Glasgow University (invited by Stephen Pride).

July 23-July 31 1998: Computational and Geometric Aspects of Modern Algebra (CGAMA 98), Heriot-Watt University, Edinburgh. Talk on the FP_3 -conjecture for metabelian groups.

August 10-August 16 1998: Groups-Korea 98. Talk on efficiency of finitely presented groups. Prolonged visit funded by the DFG and KOSEF (Korean Science and Engineering Foundation).

Feb.6-Feb.28 1999: Portland State University (in connection with the NSF-DAAD project mentioned above). Research with F.R. Beyl and N. Waller of Portland State.

Mar.1-Mar.6 1999: University of Oklahoma (invited by Noel Brady). Talks on finiteness properties of infinite permutation groups.

Nov.1-Nov. 13 1999: University of Cambridge (invited by C. Brookes and D. Kochloukova) and Glasgow University (to meet with D. Cruickshank). Talks on the FP_3 -conjecture of metabelian groups.

June 12-June 21 2000: Geometric Group Theory, Haifa/Israel. Talk on generalized knot complements.

Jan.28-Feb.3 2001: Topologische Methoden in der Gruppentheorie (org. by H.Abels, P.H.Kropholler, K.Vogtmann), Mathematisches Forschungsinstitut Oberwolfach

June 15-20 2001: Research visit at ETH Zürich

July 21-24 2002: Speaker at The AMS meeting in Portland OR

April 6-9 2004: University of Oklahoma. Speaker in the Karcher Seminar

July 2004: University of Frankfurt. Speaker in the Colloquium of the Algebra/Geometry Institute.

April 2005: Speaker in a Special Session of the AMS meeting at the University of California, Santa Barbara.

May 2005: Speaker in the Geometric Group Theory Seminar, Uni Frankfurt.

November 2005: Colloquium talk at Murray State University. Visit with Dubravko Ivansic.

March 2006: Speaker in the Maseeh Mathematics and Statistics Colloquium Series, Portland State University. Visit with Nancy Waller and Rudolf Beyl.

February 2007: Colloquium talk at CalPoly, San Luis Obispo, CA.

May 2008: Pädagogische Hochschule Karlsruhe, Germany (May 16-23). Research with Dr. Rosebrock. Talk in the Seminar of the Mathematics Department at the University Frankfurt.

July 2009: Organizer of and speaker at the “The International Seminar on Low Dimensional Homotopy Theory and Combinatorial Group Theory”, July 12-21. Joseph, OR.

September 2009: Colloquium talk at BSU.

Publications

1. *Groups with cyclic relation module*, Ph.D.-Thesis, University of Oregon, 1992;
2. *Solvable groups with cyclic relation module*, Journal of Pure and Appl. Algebra 90 (1993), 189-198;
3. *Minimal Cockcroft subgroups*, Glasgow Math. Journal 36 (1994), 87-90;
4. *On perfect subgroups of one-relator groups*, in Proceedings of the Workshop on Geometric and Combinatorial Methods in Group Theory, ICMS Edinburgh, 1993, ed. A. Duncan, N. Gilbert, J. Howie, Cambridge University Press 1994;
5. *Higher generation subgroup sets and the virtual cohomological dimension of graph products*, with Holger Meinert, J. London Math. Soc. (2) 53 (1996) 99-117;
6. *Closing the relation gap by direct product stabilization*, Journal of Algebra 182 (1996), 511-521;
7. *Embeddings into efficient groups*, Proc. Edinburgh Math. Soc. (40) (1997), 317-324;
8. *The Geometry of group extentions*, with Y.G.Baik and S.J. Pride, Journal of Group Theory 1 (1998), 395-416;
9. *On the dimension of groups acting on buildings*, Groups St.Andrews 1997 at Bath (ed. C.M. Campbell, E.F. Robertson, N. Ruskuc, G.C. Smith), LMS Lecture Note Series 260, Cambridge University Press;
10. *Some aspects of efficiency*, in Groups-Korea 1998 (ed. Y.G. Baik, D.L. Johnson, A.C. Kim), de Gruyter 2000;
11. *Problems in Low Dimensional Topology*, with C. Hog-Angeloni, W. Metzler, S Rosebrock, in Kluwer Encyclopedia of Mathematics Supp. II (ed. Michiel, Hazewinkel), Kluwer Academic Publisher, 2000.

12. *A remark on the polyhedrality theorem for the Σ -invariants of modules over abelian groups*, with R. Bieri, *Math. Proc. Cambridge Phil. Soc.* 131 (2001), no. 1, 39-43;
13. *Generalized knot complements and some aspherical ribbon disc complements*, with S. Rosebrock, *Journal of Knot Theory and its Ramifications*, Vol. 12, No. 7 (2003) 947-962;
14. *The FP_3 -conjecture for metabelian groups*, with R. Bieri, *J. London Math. Soc.* (2) 64 (2001), 595-610;
15. *Homological decision problems for finitely generated groups with solvable word problem*, with W.A. Bogley, *Internat. J. Alg. Comp.* 12 (2002), 213-221.
16. *On the Σ^3 -conjecture for metabelian groups*, with D. Kochloukova, *J. of the London Math. Soc.* (3) 67 (2003), 609-625;
17. *Building Resolutions*, with D. Kochloukova, *Journal of Algebra* 269 (2003), 632-651.
18. *The Σ^2 -conjecture for metabelian groups: the general case*, with D. Kochloukova, *J. Algebra* 273 (2004), no. 2, 435-454.
19. *Improving tameness for metabelian groups*, with W.A. Bogley, *New York J. Math.* 10 (2004), 1-8.
20. *On the homotopy classification of complexes with aspherical fundamental group*, with J. Jensen, *Topology and its Applications*, Vol. 153, Issue 15 (2006), 3000-3006.
21. *Exotic presentations and homotopy types for certain 1-relator groups*, with J. Jensen, *Algebraic & Geometric Topology* (2006), 2163-2173.
22. *On distinguishing Virtual knot groups from knot groups*, with S. Rosebrock, to appear in the *Journal of Knot Theory and its Ramifications*, Vol. 19, No. 5 (2010), 695-704.
23. *Hyperbolic alternating virtual link groups*, to appear in *Groups, Geometry, and Dynamics*, 2011.