Magdalena Boos

Curriculum Vitae

Ruhr University Bochum
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http://www.rub.de/ffm/Lehrstuehle/Algebra/boos.html

Education

11.2008 - 07.2012 **Doctoral studies Mathematics**, *Bergische Universität*, Wuppertal.
Certificate: Promotion (Doctorate)
Dissertation: "Conjugation on varieties of nilpotent matrices"
Main focus: "Representation Theory", "Invariant Theory" and "Algebraic Geometry"

04.2008 - 11.2008 **Diploma studies Mathematics**, *Bergische Universität*, Wuppertal.
Certificate: Diplom (Advanced Degree)
Diploma thesis: "B-Bahnen 2-nilpotenter Matrizen"

10.2003 - 10.2007 **Diploma studies Mathematics**, *Westfälische Wilhelms-Universität*, Münster.
Main focus: "Representation Theory" and "Probability Theory"
Minor field of study: "Mathematical Logic"

Employment History

02.2021 - 02.2024 **Temporary Position for Principal Investigator**, *Ruhr-Universität*, Bochum.
Individual Research Grant, Deutsche Forschungsgemeinschaft

06.2020 - 02.2021 **Parental leave**.
04.2018 - 11.2018 Three sons (*October 2016, *April 2018, *July 2020)
09.2016 - 06.2017

09.2019 - 06.2020 **Research assistant**, *Ruhr-Universität*, Bochum.
Faculty of Mathematics, Chair of Algebra

08.2019 **Oberwolfach Leibniz Fellow**, *Math. Forschungsinstitut*, Oberwolfach.
08.2017 Joint with Dr. H. Franzen

07.2019 **Return grant**, *Ruhr-Universität*, Bochum.
DFG Rückkehrstipendium

01.2019 - 06.2019 **Visiting researcher**, *Sapienza Università*, Rome.
DFG Forschungsstipendium

11.2018 - 12.2018 **Research assistant**, *Ruhr-Universität*, Bochum.
06.2017 - 04.2018 Faculty of Mathematics, Chair of Algebra
04.2016 - 09.2016 *Reduced position (75%) from 12.17 - 04.18*

08.2014 - 03.2016 **Research assistant**, *Bergische Universität*, Wuppertal.
Department of Mathematics, Research group "Algebra and Number Theory"

10.2012 - 08.2014 **Product manager**, *zeb/information.technology GmbH & Co. KG*, Münster.
Duties: Full responsibility of one of the software applications, for example of budget, customer contact, requirements and testing; Supervision of a Bachelor thesis (information technology)

11.2008 - 09.2012	**Research assistant**, *Bergische Universität*, Wuppertal. Department of Mathematics, Research group "Algebra and Number Theory"
04.2008 - 11.2008	**Student assistant**, *Bergische Universität*, Wuppertal.
10.2007 - 12.2007	**Intern**, *Escola de Educação Infantil Kinderland*, Curitiba, Brasil.
2005-2007	**Student assistant**, *Westfälische Wilhelms-Universität*, Münster.

Research

Peer-reviewed publications

[11] **M. Boos** and G. Cerulli Irelli, *Symmetric degenerations are not in general induced by type A degenerations*, Rend. Mat. Appl. (7) 43 (2022), no. 2, 133–149.

[10] **M. Boos** and H. Franzen, *Weight Spaces and Attracting Sets for Torus Actions on Quiver Moduli*, Bull. Lond. Math. Soc., online first (2022), https://doi.org/10.1112/blms.12649.

[9] G. Bellamy and **M. Boos**, *Semi-simplicity of the category of admissible D-modules*, Kyoto J. Math. 61 (2021), no. 1, 115–170.

[8] G. Bellamy and **M. Boos**, *The (cyclic) enhanced nilpotent cone via quiver representations*, Manuscripta Math. 47 (2020), no. 3-4, 333–362.

[7] **M. Boos** and Michaël Bulois, *Parabolic Conjugation and Commuting Varieties*, Transform. Groups 24 (2019), no. 4, 951–986.

[6] **M. Boos**, G. Cerulli Irelli and F. Esposito, *Parabolic orbits of 2-nilpotent elements for classical groups*, J. Lie Theory 29 (2019), no. 4, 969–996.

[5] **M. Boos**, *Multi-graded nilpotent tuples*, Comm. Algebra 47 (2019), no. 8, 3399–3420.

[4] **M. Boos**, *Staircase algebras and graded nilpotent pairs*, J. Pure Appl. Algebra 221 (2017), no. 8, 2032–2052.

[3] **M. Boos**, *Finite parabolic conjugation on varieties of nilpotent matrices*, Algebr. Represent. Theory 17 (2014), no. 6, 1657–1682.

[2] **M. Boos**, *Non-reductive conjugation on the nilpotent cone*, Algebr. Represent. Theory 17 (2014), no. 6, 1683–1706.

[1] **M. Boos** and Markus Reineke, *B-orbits of 2-nilpotent matrices and generalizations*, (English summary) Highlights in Lie algebraic methods, 147–166, Progr. Math., 295, Birkhäuser/Springer, New York, 2012.

Preprints and other publications

[4] **M. Boos**, *Approaching symplectic/orthogonal orbit closure relations*, Oberwolfach Reports, No. 23/2022, Mathematisches Forschungsinstitut Oberwolfach.

[3] **M. Boos** and G. Cerulli Irelli, *On degenerations and extensions of symplectic and orthogonal quiver representations*, Preprint (2021), arxiv:2106.08666.

[2] **M. Boos**, *Finite parabolic conjugation and commuting varieties*, Oberwolfach Reports, No. 25/2015, Mathematisches Forschungsinstitut Oberwolfach.

[1] **M. Boos**, *Conjugation on varieties of nilpotent matrices*, Dissertation (2012), Bergische Universität Wuppertal.

Selected Talks

2023 **Conference on Representation Theory**, *University Claude Bernard*, Lyon.
Title: tba

OS Darstellungstheorie, *Rheinische Friedrich-Wilhelms-Universität*, Bonn.
Title: tba

2022 **20th ICRA 2022**, *Uruguay and Argentina*, Online.
Title: About symplectic and orthogonal orbit closure relations

Workshop "Interactions between Algebraic Geometry and Noncommutative Algebra", *Mathematisches Forschungsinstitut*, Oberwolfach.
Title: Approaching symplectic/orthogonal orbit closure relations

Algebra and Geometry Seminar, *Queen's-RMC*, Online.
Title: Symmetric quiver representations and degenerations

2021 **Workshop "Representations of algebras and sheaves"**, *Universität Bielefeld*.
Title: Symmetric quiver representations and degenerations

SMRI Algebra and Geometry, *University of Sydney*, Online.
Title: Advertising symmetric quivers and their representations

Women and Mathematics, *Institute for Advanced Study Princeton*, Online.
Title: Classical Lie-theoretic questions via Representation Theory

Women in Combinatorics and Representation Theory, *UC Riverside*, Online.
Title: Classical group actions via symmetric representations

FD Seminar, Online.
Title: On symmetric quivers and their degenerations

2020 **Emmy-Noether-Seminar**, *Friedrich-Alexander-Universität*, Erlangen.
Title: Approaching degenerations in classical Lie types

2019 **Algebra and Representation Theory Seminar** , *Tor Vergata*, Rome.
Title: Towards degenerations for algebras with self-dualities

Incontri di Algebra e Geometria, *Sapienza Università*, Rome.
Title: Conjugation on the nilpotent cone

2017 **Bibo-Seminar**, *Universität Bielefeld*.
Title: The algebraic U-quotient of the nilpotent cone

Conference "Some Trends in Algebra 2017", Prague.
Title: The U-invariant ring of the nilpotent cone

OS Darstellungstheorie, *Rheinische Friedrich-Wilhelms-Universität*, Bonn.
Title: Representation theory of the enhanced (cyclic) nilpotent cone

OS Gruppen und Geometrie, *Universität Bielefeld*.
Title: Examining parabolic group actions with quiver representations

2016 **OS Algebra**, *Westfälische Wilhelms-Universität*, Münster.
Title: "Finiteness of parabolic conjugation with representation-theoretic methods"

Workshop "Young Women in Representation Theory", *Rheinische Friedrich-Wilhelms-Universität*, Bonn.
Title: "A finiteness criterion for parabolic conjugation"

Séminaire Stéphanois de mathématiques accessibles, *Institut Camille Jordan*, St. Étiennne.
Title: "Quivers and their representations: Linear algebra at its best"

Séminaire d'algèbre, *Institut Camille Jordan*, Lyon.
Title: "Graded nilpotent pairs via quiver representations"

2015 **Darstellungstheorietage 2015**, *Universität Stuttgart*.
Title: "Staircase algebras and graded nilpotent pairs"

BIREP Seminar, *Universität Bielefeld*.
Title: "Criteria for finite parabolic conjugation"

OS Darstellungstheorie, *Rheinische Friedrich-Wilhelms-Universität*, Bonn.
Title: "Towards a criterion for finite parabolic conjugation motivated by commuting varieties"

Workshop "Enveloping Algebras and Geometric Representation Theory", *Mathematisches Forschungsinstitut*, Oberwolfach.
Title: "Finite parabolic conjugation and commuting varieties"

2014 **Séminaire d'algèbre**, *Institut Camille Jordan*, Lyon.
Title: "Finite parabolic conjugation on varieties of nilpotent matrices"

Conference "Representations of Algebraic Groups and Related Objects", *Friedrich Schiller University*, Jena.
Title: "Parabolic conjugation on varieties of nilpotent matrices"

2011 **Doktorandentagung**, *Rheinische Friedrich-Wilhelms-Universität*, Bonn.
Title: "Borel-conjugation on varieties of nilpotent matrices"

2010 **BIREP - Workshop**, *Universität Bielefeld*.
Title: "Parabolic orbits of 2-nilpotent matrices"

ICRA XIV, *University of Tokyo*.
Title: "B-orbits of 2-nilpotent matrices"

Academic Self-Administration

Funding, research stays and awards

05.2022 **Workshop "Interactions between Algebraic Geometry and Noncommutative Algebra"**, MFO.
Personal invitation to participate, to give a talk and to publish an Oberwolfach Report

02.2021 - 02.2024 **Individual Research Grant: Temporary Position for Principal Investigator**, DFG.
Research project: "Modelling classical types: Algebraic group actions via algebras with symmetries"

2021 **Application procedure "Juniorprofessur W1"**, HHU Düsseldorf.
Place on the nomination list

08.2017/08.2019 **Oberwolfach Leibniz Fellow**, *Funding Grant*, MFO.
Research stay of two months (with Dr. Hans Franzen)

07.2019 **Return grant**, *Funding grant Rückkehrstipendium*, DFG.
Full funding for one month

01.2019 - 06.2019 **Research Fellowship**, *Funding grant*, DFG.
Full funding for a research stay of six months at Sapienza University in Rome

04.2016 **Professeur invité**, *Grant*, Université Jean Monnet, St. Étienne.
Fully funded research stay of one month (split into two periods April 3rd - 16th, May 16th - 20th)

10.2014 - 01.2016 **Position: Director of "Mathewerkstatt"**.
Funded by "Gemeinsames Bund-Länder-Programm für bessere Studienbedingungen und mehr Qualität in der Lehre", Federal Ministry of Education and Research

05.2015 **Oberwolfach Leibniz Graduate Student**, *Funding Grant*, MFO.
Workshop: "Enveloping Algebras and Geometric Representation Theory"

12.2014 **Research stay**, *Université Jean Monnet, St. Étienne*.
Funded by Institut Camille Jordan

Activities

05.2021 **Panel discussion "Sustaining the career"**, *Panelist*.
Women in Combinatorics and Representation Theory (UC Riverside/Online)

Since 2019 **Mentorship of PhD candidate Karen Martinez**.
In connection with GRK 2240

2018 - 2022 **GRK "Algebro-geometric Methods in Algebra, Arithmetic & Topology"**, Heinrich-Heine-Universität Düsseldorf and Bergische Universität Wuppertal.
Member

01.2017 **Darstellungstheorietage**, *Organiser*.
Together with Prof. Dr. B. Späth

Since 2016 **In charge of the webpage of the Chair of Algebra (RUB)**.
Created with Imperia (with a substitute during parental leaves)

2016 - 2019 **Participation in project "Geometry and representation theory at the interface of Lie algebras and quivers"**, *Supported by DFG and RSF*, M. Reineke and E. Feigin.
Subproject "Actions of Borel subalgebras and abelian algebras on representations"

Committees

06.2016 - 09.2016 **Professor Search Committee (Algebra)**, *Active Member*.

10.2014 - 03.2016 **Structural Committee**, *Elected Member*.

Reviewing and referee activities

Reviews **Mathematical Reviews**.

zbMATH.

Reports **Bulletin of the LMS, Linear and Multilinear Algebra**.

RUB Research School.

Teaching

Ruhr-Universität Bochum

WS 2022/23	**Own lecture "Representation Theory of associative algebras"**.
2019 - 2020	**Exercise classes "Mathematics for Engineers"**, *Prof. Dr. J. Winkelmann*.
2017 - 2018	**Exercise classes "Linear Algebra 1"**, *Prof. Dr. C. Thäle*.
	Exercise classes "Linear Algebra 2", *Prof. Dr. M. Reineke*.
2016	**Exercise classes "Mathematics for Engineers 2"**, *Prof. Dr. G. Laures*.

Bergische Universität Wuppertal

2014-2016	**Commutative Algebra**, *with Prof. Dr. M. Reineke*.
	Seminar "Commutative Algebra", *with Prof. Dr. M. Reineke*.
	Lie Algebras, *with Dr. T. Weist*.
2011-2012	**Elementary Number Theory**, *with Prof. Dr. K. Bongartz*.
	Seminar "Number Theory", *with Prof. Dr. R. Huber and H. Franzen*.
	Tutorial "Linear Algebra", *with Prof. Dr. R. Huber*.
2009-2010	**Linear Algebra 1 and 2**, *with Prof. Dr. M. Reineke and Dr. O. Lorscheid*.
	Seminar "Number Theory", *with Prof. Dr. M. Reineke and Dr. R. Olbricht*.
	Number Theory, *with Prof. Dr. M. Reineke and Dr. R. Olbricht*.
2008-2009	**Exercise classes "Algebra"**, *with Prof. Dr. M. Reineke and Dr. R. Olbricht*.
	Exercise class "Preparatory class", *Prof. Dr. K. Bongartz*.

Westfälische Wilhelms-Universität Münster

2005-2007	**Exercise classes "Linear Algebra"**, *Prof. Dr. S. Bosch, Prof. Dr. M. Reineke*.

Further Skills

Computers	**LaTeX2e, MS Office (Excel, Powerpoint, ...)**, Proficient.
	HTML, Scala, Singular, Basic Knowledge.
Languages	**German**, First language.
	English, Business fluent.
	Portuguese, French, Italian, Basic skills.
Volunteer activities	**Paediatric oncology of the University Medical Centre**, *Münster*. Person in charge of skiing groups *Skill enhancement:* "Skiing with disabled children and adolescents"