

## ▷CONTACT

jobdaisie.rock@kuleuven.be  
<https://daisierock.codeberg.page/math.html>

## ▷GENDER

Woman

## ▷PRONOUNS

She / Her

## ▷EDUCATION

Ph.D. in Mathematics from Brandeis University, Waltham, **USA** 24 May 2020

## ▷POSITIONS

FWO Senior Postdoctoral Fellowship November 2024 – October 2027  
 Awarded by Fonds Wetenschappelijk Onderzoek (FWO)  
 Position taken at KU Leuven, Leuven, **Belgium**

BOF Postdoctoral Fellowship February 2022 – October 2024  
 Universiteit Gent, Ghent, **Belgium**

Visiting Research Scholar November – December 2021  
 Supported by Professor Fatemeh Mohammadi’s BOF Grant  
 Universiteit Gent, Ghent, **Belgium**

Postdoctoral Fellowship September – December 2020  
 Junior Trimester Program on “New Trends in Representation Theory”  
 Hausdorff Research Institute for Mathematics (Universität Bonn), Bonn, **Germany**

## ▷AWARDS

€250 000 (approx.) FWO Senior Postdoctoral Fellowship 2024  
 Competitive fellowship awarded based on ranking.  
 Fonds Wetenschappelijk Onderzoek (FWO), Brussels, **Belgium**

€160 000 (approx.) BOF Postdoctoral Fellowship 2021  
 Special Research Fund award based on FWO applications that achieved an interview.  
 Universiteit Gent, Ghent, **Belgium**

€8640 Postdoctoral Fellowship 2020  
 Junior Trimester Program on “New Trends in Representation Theory”  
 Hausdorff Research Institute for Mathematics, Bonn, **Germany**

US\$2000 Summer Research Fellowship 2018  
 Brandeis University, Waltham, **USA**

## ▷RESEARCH INTERESTS

Continuous/infinite generalizations of algebraic structures to better understand the related **(higher) homological algebra** and **cluster algebras/categories** with motivation from **persistent homology** and **scattering diagrams**, combining algebraic techniques with those from **combinatorics** and **analysis**.

## ▷PAPERS

## ▷▷PEER REVIEWED

(with C. Cummings, S. Gratz, E. Kirkman, J. C. Letz, and Š. Špenko) *An equivalence linking CM-types  $A_\infty$  and  $D_\infty$* . Accepted at the Proceedings of the American Mathematical Society. Preprint: [arXiv:2510.24642](https://arxiv.org/abs/2510.24642) (2026)

(with M. C. Kulkarni, J. P. Matherne, and K. Mousavand) *A continuous associahedron of type A*. *Mathematische Zeitschrift* (2025). <https://doi.org/10.1007/s00209-025-03864-x>

(with F. Mohammadi and F. Zaffalon) *Progress on Infinite Cluster Categories Related to Triangulations of the (Punctured) Disk*. *Journal of Algebra and its Applications* special issue on “Cluster Algebras and Related Topics” (2025). <https://doi.org/10.1142/S0219498826501203>

(with S. Zhu) *Continuous Nakayama Representations*. Applied Categorical Structures (2023).  
<https://doi.org/10.1007/s10485-023-09748-7>

(with E. J. Hanson) *Composition series of arbitrary cardinality in modular lattices and abelian categories*. Advances in Mathematics (2023).  
<https://doi.org/10.1016/j.aim.2023.109292>

(with E. J. Hanson) *Decomposition of Pointwise Finite-Dimensional  $\mathbb{S}^1$  Persistence Modules*. Journal of Algebra and its Applications (2022).  
<https://doi.org/10.1142/S0219498824500543>

*Continuous Quivers of Type A (IV) Continuous Mutation and Geometric Models of E-clusters*. Algebras and Representation Theory (2022).  
<https://doi.org/10.1007/s10468-022-10175-w>

(with K. Igusa and G. Todorov) *Continuous Quivers of Type A (III) Embeddings of Cluster Theories*. Nagoya Mathematical Journal (2022). <https://www.doi.org/10.1017/nmj.2021.16>

(with K. Igusa and G. Todorov) *Continuous Quivers of Type A (I) Foundations*. Rendiconti del Circolo Matematico di Palermo Series 2 (2022), <https://doi.org/10.1007/s12215-021-00691-x>

#### ▷▷SUBMITTED FOR PEER REVIEW

(with H. Thomas) *Preprojective categories of type A*.  
 Preprint: [arXiv:2512.09618](https://arxiv.org/abs/2512.09618) [math.RT] (2025)

(with C. Paquette and E. Yildirim) *Categories of generalized (thread) quivers*.  
 Preprint: [arXiv:2410.14656](https://arxiv.org/abs/2410.14656) [math.RT] (2024).

(with K. Igusa) *Stability conditions for representations of continuous type A*.  
 Undergoing revision for Annals of Representation Theory. Preprint: [arXiv.org:2302.14792](https://arxiv.org/abs/2302.14792) [math.RT] (2023).

*Continuous Quivers of Type A (II) The Auslander-Reiten space*. Awaiting peer review at Algebra and Discrete Mathematics, based in Ukraine. Preprint: [arXiv:1910.04140](https://arxiv.org/abs/1910.04140) [math.RT] (2019)

#### ▷▷PREPRINTS AND PAPERS IN PREPARATION

*Introducing pixelation with applications*  
 Preprint: [arXiv:2603.25432](https://arxiv.org/abs/2603.25432) [math.CT] (2026)

(with K. M. Jacobsen) *Admissible ideals for  $\mathbb{k}$ -linear categories*.  
 Preprint: [arXiv:2209.13944](https://arxiv.org/abs/2209.13944) [math.RT] (2022)

*Cluster Theories and Cluster Structures of Type A*.  
 Preprint: [arXiv.org:2112.14795](https://arxiv.org/abs/2112.14795) [math.RT] (2022)

(with C. Paquette and E. Yildirim) *Cluster categories from thread quivers*.  
 In preparation.

(with R. Bennett-Tennenhaus) *Semilinear representations and persistence modules*.  
 In preparation.

#### ▷MENTORSHIP AND TEACHING

##### ▷▷PHD STUDENTS

Bruno Joaquín Giordano September 2025 – Present  
 co-supervising with F. Mohammadi at KU Leuven, **Belgium**

Francesca Zaffalon November 2021 – September 2024  
 co-supervised with F. Mohammad at UGent and KU Leuven, **Belgium**

## ▷▷BACHELOR PROJECTS

- Quiver Representations and related topics (3 projects) Fall 2025  
 Introduction to path algebras and their representations with pairs working more deeply on selected topics.  
 KU Leuven, Leuven, **Belgium**
- Functors, Representations, and Persistent Homology Spring 2020  
 An introduction to persistent homology as both representations and functors  
 Brandeis University, Waltham, **USA**
- Category Theory and Topoi Spring 2018  
 Refresher of basic category theory and an introduction to topoi  
 Brandeis University, Waltham, **USA**
- Introduction to Category Theory Spring 2017  
 An introduction to category theory and abelian categories  
 Brandeis University, Waltham, **USA**

## ▷▷COURSES TAUGHT AS PRIMARY INSTRUCTOR

- Mathematics Spring 2023, Spring 2024  
 Focus on understanding applications of mathematical concepts and techniques; includes numbers, variables and units, algebraic functions, transcendental functions, calculus, complex numbers, first-order differential equations, and linear algebra  
 Universiteit Gent, Ghent, **Belgium**
- Applied Linear Algebra Summer 2019  
 Matrices, determinants, linear equations, vector spaces, eigenvalues, quadratic forms, linear programming with emphasis on techniques and applications  
 Brandeis University, Waltham, **USA**
- Topology (Prepcamp) Summer 2018  
 Prep camp in topology for incoming graduate students  
 Brandeis University, Waltham, **USA**
- Techniques of Calculus (b) Fall 2016, Spring 2017, Fall 2017, & Spring 2018  
 Introduction to integral calculus of one variable, with emphasis on techniques and applications  
 Brandeis University, Waltham, **USA**

## ▷PEER REVIEW

- American Mathematical Society Contemporary Mathematics  
 Applied Categorical Structures  
 Banff International Research Station for Mathematical Innovation and Discovery  
 Communications in Algebra  
 Journal of Algebra and its Applications  
 Journal of Algebraic Combinatorics  
 Journal of Pure and Applied Algebra  
 Mathematische Zeitschrift  
 Proceedings of the American Mathematical Society  
 Symmetry, Integrability and Geometry: Methods and Applications

## ▷CONFERENCES ORGANIZED

- Functor and Tensor Categories, Models And Systems June 2024  
 Satellite Conference of the 9th European Congress of Mathematics (9ECM)  
 Universidade de Santiago de Compostela, Santiago de Compostela, **Spain**

Functor Categories, Model Theory, and Constructive Category Theory July 2023  
 Universidad de Málaga, Málaga, **Spain**

Algebraic Analysis, Functor Categories and Constructive Methods March 2023  
 Universiteit Gent, Ghent, **Belgium**

Functor Categories, Model Theory, and Constructive Category Theory July 2022  
 Universidad de Almería, Almería, **Spain**

▷INTERNATIONAL RELATIONS

**19** collaborators in Belgium, Bulgaria, Canada, China, Denmark, Germany, Japan, UK, USA  
**19** invited talks and an additional **18** presentations hosted in **11** countries

▷SEMINARS ORGANIZED

Cluster Algebras + More Fall 2025 – Spring 2026  
 Reading seminar covering cluster algebras and its connection to surface models, quiver representations, matroids, and Grassmannians.  
[https://daisierock.codeberg.page/math\\_reading\\_seminar\\_2025\\_2026.html](https://daisierock.codeberg.page/math_reading_seminar_2025_2026.html)

▷LANGUAGES

English: Mother tongue  
 Dutch: Intermediate (B1)

▷PRESENTATIONS

▷▷INVITED TALKS

Conference on Quantum Groups and Cluster Algebras August 2026  
 International Center for Mathematical Sciences - Sofia, **Bulgaria**

Computable invariants of quiver representations July 2026  
 Lorentz Center - Leiden, **Netherlands**

Workshop on Categorification in Functional Analysis June 2026  
 Universität Hamburg, **Germany**

Queer and Trans Mathematicians in Algebra and Representation Theory (QTMART) July 2025  
 Hausdorff Center for Mathematics (Universität Bonn), **Germany**

Algebras and Representation Theory in Germany (ARTIG) 6 July 2025  
 Ruhr Universität Bochum, **Germany**

Women In Non-commutative Algebra and Representation Theory (WINART) 5 March 2025  
 Banff International Research Station, Banff, **Canada**

SIAM Conference on Applied Algebraic Geometry (AG23) July 2023  
 Eindhoven University of Technology (TU/e), Eindhoven, **Netherlands**

Advances in Representation Theory of Algebras (ARTA) IX June 2023  
 Queen's University, Kingston, **Canada**

Combinatorial Aspects of Representation Theory March 2023  
 Centre of Advanced Study at the Norwegian Academy of Sciences and Letters, Oslo, **Norway**

Symposium on Koszul Algebras and Abelian Categories May 2022  
 Aarhus Universitet, Aarhus, **Denmark**

Flash Talks in Representation Theory January 2022  
 Norges Teknisk-Naturvitenskapelige Universitet (NTNU), Trondheim, **Norway**

AMS Sectional Meeting October 2021  
 Quiver representations: bridging theory and application  
 Virtual Conference  
 originally to be held at Creighton University in Omaha, Nebraska, **USA**

Representation Theory Seminar Universität Bielefeld, Bielefeld, <b>Germany</b>	June 2021
Algebra Seminar Norges Teknisk-Naturvitenskapelige Universitet (NTNU), Trondheim, <b>Norway</b>	May 2021
Théorie de Représentations et ses Applications et Connections Université de Sherbrooke, Sherbrooke, <b>Canada</b>	January 2021
Ghent Algebra and Geometry Seminars Universiteit Gent, Ghent, <b>Belgium</b>	November 2020
Representation Theory and Related Topics Seminar Northeastern University, Boston, <b>USA</b>	October 2020
Séminaire D'algèbre Université de Sherbrooke, Sherbrooke, <b>Canada</b>	April 2020
Representation Theory and Related Topics Seminar Northeastern University, Boston, <b>USA</b>	November 2019
Homological Methods and Tilting Theory of Finite Dimensional Algebras In Honor of Gordana Todorov's 70th Birthday University of Iowa, Iowa City, <b>USA</b>	August 2019
Functor Categories, Model Theory, and Constructive Category Theory University of Tartu, Pärnu College, Pärnu, <b>Estonia</b>	July 2019
Representation Theory and Related Topics Seminar Northeastern University, Boston, <b>USA</b>	May 2019
▷▷OTHER TALKS	
Tales of Geometries Université libre de Bruxelles, Brussels, <b>Belgium</b>	October 2024
Functor and Tensor Categories, Models And Systems At the request of the other organisers. Universidad de Santiago de Compostela, Santiago de Compostela, <b>Spain</b>	June 2024
Categories, Clusters and Completions Master Class Aarhus Universitet, Aarhus, <b>Denmark</b>	March 2023
Algebraic Analysis, Functor Categories, and Constructive Methods Universiteit Gent, Ghent, <b>Belgium</b>	March 2023
Logic Seminar Universiteit Gent, Ghent, <b>Belgium</b>	February 2023
International Conference on Representations of Algebras (ICRA) Universidad de Buenos Aires, Buenos Aires, <b>Argentina</b>	August 2022
Functor Categories, Model Theory, and Constructive Category Theory At the request of the other organisers. Universidad de Almería, Almería, <b>Spain</b>	July 2022
Trans Math Day Virtual Conference	December 2020
XXXIème Rencontre de Théorie des Représentations des Algèbres Université de Sherbrooke, Sherbrooke, <b>Canada</b>	September 2019
Maurice Auslander Distinguished Lectures and International Conference Woods Hole, <b>USA</b>	April 2019

XXXème Rencontre de Théorie des Représentations des Algèbres      September 2018  
Université de Sherbrooke, Sherbrooke, **Canada**

▷▷POSTER PRESENTATIONS

New developments in representation theory of algebras      November 2024  
Okinawa Institute of Science and Technology, **Japan**

Representation Theory and Geometry 2022      February 2022  
virtually hosted by Queen's University and the Royal Military College of Canada, **Canada**

Workshop and International Conference on Representations of Algebras (ICRA)      November 2020  
virtually hosted by Norges Teknisk-Naturvitenskapelige Universitet, Trondheim, **Norway**  
originally to be held in Trieste, Italy

Rencontre de Théorie des Représentations des Algèbres - Édition Corona      September 2020  
virtually hosted by Université de Sherbrooke, Sherbrooke, **Canada**  
originally to be held in Sherbrooke, Canada