

# Gustavo Jasso

Doctor of Philosophy

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## Biographical information

Full name Gustavo Jasso Ahuja  
Date of birth March 18, 1987  
Place of birth Guadalajara, Mexico  
Nationality Mexican

### Languages

**Spanish**, native language.

**English**, fluent in speaking, reading and writing.

TOEFL iBT: 114/120 (November 2010).

**German**, advanced intermediate (I have lectured in German).

## Research interests

- Homological algebra, homotopical algebra, higher category theory
- Representation theory of finite-dimensional algebras
- Cluster algebras

## Employment history

2017–Present **Akademischer Rat auf Zeit**, *Mathematisches Institut, Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, 01.10.2017–Present.  
Investigator in [Research Area A2](#) Representations and symmetries in algebra and topology.

2014–2017 **Hausdorff Postdoc**, *Hausdorff Center for Mathematics, Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, 01.10.2014–30.09.2017.  
Mentor: Prof. Dr. Jan Schröer.

## Education history

2011–2014 **Doctor of Philosophy (Mathematical Science)**, *Nagoya University*, Nagoya, Japan, 29.09.2014.  
Thesis title: On  $\tau$ -tilting theory and higher Auslander–Reiten theory.  
Advisor: Prof. Dr. Osamu Iyama.

2009–2011 **Master of Science degree in mathematics (with honorific mention)**, *Universidad Nacional Autónoma de México (UNAM)*, Mexico City, Mexico.  
Thesis title: El crecimiento de un álgebra de conglomerados de tipo tubular.  
Advisors: Prof. Dr. Michael Barot (official) and Prof. Dr. Christof Geiss (unofficial second advisor).  
GPA: 9.67/10.

2005–2010 **Undergraduate degree in mathematics (with honorific mention)**, *Universidad Nacional Autónoma de México (UNAM)*, Mexico City, Mexico.  
Thesis title: Álgebras de Lie de tipo afín extendido y formas cuadráticas.  
Advisor: Prof. Dr. Michael Barot.  
GPA: 9.84/10.

## Academical distinctions

- 2018 **International Conference on Representations of Algebras (ICRA) 2018 Award**, *ICRA 2018 Scientific and Award Committees*, Prague, Czech Republic.  
Awarded at each session of ICRA for outstanding work by young mathematicians (not older than 35 years of age, except to allow for a broken career) in the field of Representations of Finite Dimensional Algebras. A second prize was awarded to Dr. Julian Külshammer.
- 2010 **Premio Sotero Prieto 2010**, *Sociedad Matemática Mexicana*, Tuxtla Gutiérrez, Mexico.  
Awarded to the best undergraduate thesis in mathematics presented at a Mexican institution between June 2009 and May 2010 (three theses were recognized).

## List of publications

### Preprints

- [1] T. Dyckerhoff, G. Jasso, and Y. Lekili, *The symplectic geometry of higher Auslander algebras: Symmetric products of disks*, [arXiv:1911.11719](https://arxiv.org/abs/1911.11719) (2019).

### Publications

- [12] T. Dyckerhoff, G. Jasso, and T. Walde, *Generalised BGP reflection functors via the Grothendieck construction*, *Int. Math. Res. Not. IMRN* (2019), rnz194, [10.1093/imrn/rnz194](https://doi.org/10.1093/imrn/rnz194).
- [11] T. Dyckerhoff, G. Jasso, and T. Walde, *Simplicial structures in higher Auslander–Reiten theory*, *Adv. Math.* **355** (2019), 106762, [10.1016/j.aim.2019.106762](https://doi.org/10.1016/j.aim.2019.106762).
- [10] G. Jasso and Külshammer, *Higher Nakayama algebras I: Construction, with an appendix by J. Külshammer and Ch. Psaroudakis and an appendix by S. Kvamme*, *Adv. Math.* **351** (2019), 1139–1200, [10.1016/j.aim.2019.05.026](https://doi.org/10.1016/j.aim.2019.05.026).
- [9] G. Jasso and S. Kvamme, *An introduction to higher Auslander-Reiten theory*, *Bull. Lond. Math. Soc.* **51** (2019), 1, 1–24, [10.1112/blms.12204](https://doi.org/10.1112/blms.12204).
- [8] L. Demonet, O. Iyama, and G. Jasso,  *$\tau$ -tilting finite algebras, bricks, and  $g$ -vectors*, *Int. Math. Res. Not. IMRN* (2019), 3, 852–892, [10.1093/imrn/rnx135](https://doi.org/10.1093/imrn/rnx135).
- [7] O. Iyama and G. Jasso, *Higher Auslander Correspondence for Dualizing R-Varieties*, *Algebr. Represent. Theory* **20** (2017), 2, 335–354, [10.1007/s10468-016-9645-0](https://doi.org/10.1007/s10468-016-9645-0).
- [6] G. Jasso,  *$n$ -abelian and  $n$ -exact categories*, *Math. Z.* **283** (2016), 3–4, 703–759, [10.1007/s00209-016-1619-8](https://doi.org/10.1007/s00209-016-1619-8).
- [5] P. A. Bergh, G. Jasso, and M. Thaule, *Higher  $n$ -angulations from local rings*, *J. Lond. Math. Soc. (2)* **93** (2016), 1, 123–142, [10.1112/jlms/jdv064](https://doi.org/10.1112/jlms/jdv064).
- [4] G. Jasso,  *$\tau^2$ -stable tilting complexes over weighted projective lines*, *Adv. Math.* **273** (2015), 1–31, [10.1016/j.aim.2014.12.018](https://doi.org/10.1016/j.aim.2014.12.018).
- [3] G. Jasso, *Reduction of  $\tau$ -tilting modules and torsion pairs*, *Int. Math. Res. Not. IMRN* (2015), 16, 7190–7237, [10.1093/imrn/rnu163](https://doi.org/10.1093/imrn/rnu163).
- [2] G. Jasso, *The extended affine Lie algebra associated with a connected non-negative unit form*, *J. Algebra* **409** (2014), 148–161, [10.1016/j.jalgebra.2014.03.029](https://doi.org/10.1016/j.jalgebra.2014.03.029).
- [1] M. Barot, C. Geiß, and G. Jasso, *Tubular cluster algebras II: Exponential growth*, *J. Pure Appl. Algebra* **217** (2013), 10, 1825–1837, [10.1016/j.jpaa.2012.12.012](https://doi.org/10.1016/j.jpaa.2012.12.012).

### Proceedings, extended abstracts & other writings

- [8] G. Jasso, *The symplectic geometry of higher Auslander algebras, an overview*, in: *Representation Theory of Quivers and Finite Dimensional Algebras, Abstracts from the workshop held January 19–25, 2020*, ed. by C. Amiot, W. Crawley-Boevey, O. Iyama, and H. Krause, Oberwolfach Rep. (to appear).
- [7] G. Jasso, *Higher Auslander algebras of type  $\mathbb{A}$  and the higher Waldhausen  $S$ -constructions*, [arXiv:1904.10163](https://arxiv.org/abs/1904.10163) (2019), To appear in the proceedings of the ICRA 2018.

- [6] G. Jasso and J. Külshammer, *Nakayama-type phenomena in higher Auslander-Reiten theory*, in: Representations of algebras, ed. by G. J. Leuschke, F. Frauke Bleher, R. Schiffler, and D. Zacharia, vol. 705, Contemp. Math. Amer. Math. Soc., Providence, RI, 2018, 79–98, [10.1090/conm/705/14191](https://doi.org/10.1090/conm/705/14191).
- [5] G. Jasso, *Spherical objects in higher Auslander–Reiten theory*, in: Representation Theory of Quivers and Finite Dimensional Algebras, Abstracts from the workshop held February 19–25, 2017, ed. by W. Crawley-Boevey, O. Iyama, and H. Krause, vol. 14, Oberwolfach Rep. no. 1, 2017, 591–681, [10.4171/OWR/2017/12](https://doi.org/10.4171/OWR/2017/12).
- [4] G. Jasso and J. Külshammer, *The naive approach for constructing the derived category of a  $d$ -abelian category fails*, [arXiv:1604.03473](https://arxiv.org/abs/1604.03473) (2016), Not intended for publication.
- [3] G. Jasso, *Reduction of  $\tau$ -tilting modules and torsion classes*, in: Proceedings of the 16th Workshop on Representation Theory of Algebraic Groups and Quantum Groups, 2013, 157–160.
- [2] G. Jasso, *Cluster-tilted algebras of canonical type and quivers with potential*, in: Proceedings of the 45th Symposium on Ring Theory and Representation Theory, 2012, 61–68.
- [1] G. Jasso, *Cluster-tilted algebras of canonical type and graded quivers with potential*, in: Proceedings of the 15th Workshop on Representation Theory of Algebraic Groups and Quantum Groups, 2012, 13–18.

## Teaching-related activities

Dates in the future indicate impending commitments.

- 2020–2021 **Teaching assistant (Assistent)**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Winter Semester 2020/2021.  
Course: Exercises to Representation Theory I (V4A3).  
Notes: Coordinator of the tutorial sessions for the course Representation Theory I taught by Prof. Dr. Jan Schröer (4 tutors).
- 2020 **Teaching assistant (Assistent)**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Summer Semester 2020.  
Course: Übungen zu Grundzüge der Darstellungstheorie (V3A3/F4A1).  
Notes: Coordinator of the tutorial sessions for the course Grundzüge der Darstellungstheorie taught by Prof. Dr. Jan Schröer (4 tutors).
- 2019–2020 **Teaching assistant (Assistent)**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Winter Semester 2019/2020.  
Course: Übungen zu Grundzüge der Mathematik I (MB01).  
Notes: Coordinator of the tutorial sessions for the course Grundzüge der Mathematik I taught by Prof. Dr. Rainer Kaenders (6 tutors).
- 2019–2020 **Teaching assistant (Assistent)**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Winter Semester 2019/2020.  
Course: Übungen zu Einführung in die Algebra (V2A1/MB10).  
Notes: Coordinator of the tutorial sessions for the course Einführung in die Algebra taught by Prof. Dr. Jan Schröer (8 tutors).
- 2019 **Lecturer**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Summer Semester 2019.  
Course: Graduate Seminar on Representation Theory (S4A2).  
Topic: Triangulated categories in the representation theory of finite-dimensional algebras.  
Notes: The seminar consisted of weekly talks by the participants.

- 2018–2019 **Teaching assistant (Assistent)**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Summer Semester 2018.  
Course: Übungen zu Einführung in die Algebra (V2A1/MB10).  
Notes: Coordinator of the tutorial sessions for the course Einführung in die Algebra taught by Prof. Dr. Jan Schröer (8 tutors).
- 2018 **Lecturer**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Summer Semester 2018.  
Course: Graduate Seminar on Representation Theory (S4A2).  
Topic:  $\tau$ -tilting theory.  
Notes: The seminar consisted of weekly by the participants. Due to the low number of students, there were additional talks by postdocs as well as by me.
- 2018 **Teaching assistant (Assistent)**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Summer Semester 2018.  
Course: Übungen zu Lineare Algebra II (V1G4).  
Notes: Coordinator of the tutorial sessions for the course Lineare Algebra II taught by Prof. Dr. Jan Schröer (11 tutors).
- 2017–2019 **Oberseminar Darstellungstheorie**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Winter Semester 2017/2018–Winter Semester 2018/2019.  
Notes: Organiser of the research seminar on representation theory at the Mathematisches Institute of the Rheinische Friedrich-Wilhelms-Universität Bonn.
- 2016–2017 **Teaching assistant (Assistent)**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Winter Semester 2016/2017.  
Course: Übungen zu Lineare Algebra I (V1G3).  
Notes: Coordinator of the tutorial sessions for the course Lineare Algebra I taught by Prof. Dr. Jan Schröer (11 tutors).
- 2017 **Research school. New trends in representation theory: the impact of cluster theory on representation theory**, *University of Leicester*, Leicester, UK, 19.06.2016–23.06.2017.  
Notes: Tutorial sessions for the course ' $n$ -representation theory' taught by Prof. Dr. Peter Jørgensen.
- 2016–2017 **Lecturer**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany, Winter Semester 2016/2017.  
Course: Advanced Topics in Representation Theory (V5A5) - Differential graded categories, a representation theoretic approach.  
Notes: Master course taught through the Hausdorff Center for Mathematics Mentoring Program (29 lectures).  
Mentor: Prof. Dr. Jan Schröer.
- 2010 **Student teaching assistant**, *Facultad de Ciencias, Universidad Nacional Autónoma de México (FC-UNAM)*, Mexico City, Mexico.  
Course: Álgebra lineal I (in Spanish).  
Lecturer: Raúl González Silva.
- [Student supervision and thesis reviews](#)
- 2019–Present **Advisor for bachelor's thesis in mathematics**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany.
- George Tyriard. 'A Morita-theoretic proof of the Dold–Kan correspondence', expected September 2020.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
  - Tanja Helme. 'Continued fractions and snake graphs', expected September 2020.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
  - Aaron Wild. 'The differential graded nerve', September 2020.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.

- Roman Höffken. ‘Morita Theorie für Ringe und Kategorien’, January 2020.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
  - Vincent Siebler. ‘The derived category of a gentle algebra’, December 2019.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
- 2017–Present **Advisor for master’s thesis in mathematics**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany.
- Jona Klemenc. ‘The stable hull of exact  $\infty$ -categories’, August 2020.  
Second advisor (Prüfer): Prof. Dr. Stefan Schwede.
  - Calvin Pfeifer. ‘Torsion classes and wide subcategories’, January 2020.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
  - Jan-Paul Lerch. ‘Bijections in  $\tau$ -tilting theory’, October 2019.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
  - Aran Singh Tattar. ‘On Gorenstein  $k$ -categories’, April 2018.  
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
- 2015–Present **Second advisor (Prüfer) for master thesis in mathematics**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany.
- Notes: This is the role of an *examiner and rapporteur* and not the role of an advisor (despite the adopted English translation).
- Bjondina Kabashaj, ‘Tilting modules and triangulations of polygons’ (Prof. Dr. Jan Schröer, 2019).
  - Abdalla Alia, ‘ $\tau$ -tilting theory’ (Prof. Dr. Jan Schröer, 2017).
  - Islam Foniqi, ‘Finite Representation Type is Open’ (Prof. Dr. Jan Schröer, 2017).
  - Daniel Rehn, ‘Modules without Self-extensions over Path Algebras’ (Prof. Dr. Jan Schröer, 2017).
  - Bunlong Lay, ‘Crawley–Boevy–Kerner functor’ (Prof. Dr. Jan Schröer, 2017).
  - Jonas Röhrig, ‘Stable Components of Auslander–Reiten Quivers of Representation-Finite Algebras’ (Prof. Dr. Jan Schröer, 2017).
  - Leon Lang, ‘Asymptotic behaviour of Auslander–Reiten translations’ (Prof. Dr. Jan Schröer, 2017).
  - Mário Marcelo da Conceição Cardoso, ‘The global dimension of endomorphism rings of generator-cogenerators over Nakayama algebras’ (Prof. Dr. Jan Schröer, 2017).
  - Malte Leip, ‘Relative Calabi–Yau Structures over Commutative Ring Spectra’ (Prof. Dr. Dyckerhoff, 2017).
  - Vanessa Geierse, ‘Representation Theory of Polyquivers’ (Prof. Dr. Schröer, 2015).
- 2018–Present **Second advisor (Prüfer) for bachelor’s thesis in mathematics**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany.
- Notes: This is the role of an *examiner and rapporteur* and not the role of an advisor (despite the adopted English translation).
- Meyer, Sebastian, ‘Profinite Abelsche Gruppen’ (Prof. Dr. Jan Schröer, 2020).
  - Schüler, Yannik, ‘Darstellungen von modulierten Graphen’ (Prof. Dr. Jan Schröer, 2018).
  - Xiang Li, ‘The Perron–Frobenius theorem and its applications’ (Prof. Dr. Jan Schröer, 2018).

## Service to the scientific community

### Referee for the following journals

**Advances in Mathematics**; Algebras and Representation Theory; Applied Categorical Structures; Boletín de la Sociedad Matemática Mexicana; Bulletin of the Iranian Mathematical Society; Bulletin of the London Mathematical Society; Communications in Algebra; Czechoslovak Mathematical Journal; Frontiers of Mathematics in China; Glasgow Mathematical Journal; Hokkaido Mathematical Journal; Homology, Homotopy and Applications; **International Mathematics Research Notices IMRN**; **Journal für die reine und angewandte Mathematik (Crelle's Journal)**; Journal of Algebra; Journal of Pure and Applied Algebra; Nagoya Mathematical Journal.

### 'Quick opinions' for the following journals

Arkiv för matematik; Compositio Mathematica; Mathematische Zeitschrift; Proceedings of the London Mathematical Society; Transactions of the American Mathematical Society.

### Organisation of scientific events

- 2020 **ICRA 2020 (online due to the COVID-19 pandemic)**, *International Conference on Representation Theory of Algebras*, November 2020.  
Member of the organising committee.
- 2020 **FD Seminar**, *Online seminar on representation theory of quivers and finite-dimensional algebras*, Since May 2020.  
Organiser (with five other colleagues).  
See the seminar's website for details: <https://www.fd-seminar.xyz>.
- 2020 **Junior Trimester Program (JTP) on 'New trends in representation theory'**, *Hausdorff Research Institute for Mathematics (HIM)*, Bonn, Germany, 01.09.2020–18.12.2020.  
Scientific advisor (jointly with Prof. Dr. Jan Schröer).
- 2019 **Hausdorff Summer School on Stability Conditions in Representation Theory**, *Hausdorff Center for Mathematics (HCM)*, Bonn, Germany, 16.09.2019–20.09.2019.  
Organiser (jointly with Prof. Dr. Jan Schröer).  
Notes: Part of the academic program of the 'Hausdorff School for Advanced Studies'.
- 2017 **Workshop:  $A_\infty$ -structures in geometry and representation theory**, *Hausdorff Research Institute for Mathematics (HIM)*, Bonn, Germany, 04.12.2017–08.12.2017.  
Organiser (jointly with Dr. Julian Külshammer).  
Notes: Part of the scientific program of the 'Junior Trimester Program: Symplectic Geometry and Representation Theory.'
- 2017 **Spring school: Cluster Algebras in Mathematical Physics (CAMP)**, *Johannes Gutenberg-Universität Mainz*, Mainz, Germany, 27.03.2017–31.03.2017.  
Member of the Scientific Committee.  
Notes: Part of the graduate program of the [SFB/Transregio 45](#).