

Gustavo Jasso

Doctor of Philosophy

Mathematik Zentrum
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“Mathematics knows no races or geographic boundaries; for mathematics, the cultural world is one country.” – D. Hilbert

Biographical information

Full name Gustavo Jasso Ahuja
Birth date March 18, 1987
Hometown Guadalajara, Mexico
Nationality Mexican

Research interests

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

Employment history

- 2017– **Akademischen Rat auf Zeit**, *Mathematisches Institut, Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany.
Starting date: October 1, 2017.
- 2014–2017 **Hausdorff Postdoc**, *Hausdorff Center for Mathematics, Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany.
Mentor: Prof. Dr. Jan Schröer.
Starting date: October 1, 2014.
Ending date: September 30, 2017.
- 2011–2014 **Research assistant**, *Graduate School of Mathematics, Nagoya University*, Nagoya, Japan.

Education history

- 2011–2014 **Doctor of Philosophy (Mathematical Science)**, *Nagoya University*, Nagoya, Japan.
Thesis title: On τ -tilting theory and higher Auslander–Reiten theory.
Supervisor: Prof. Dr. Osamu Iyama.
Degree obtained on September 29, 2014.
- 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.
Supervisors: Prof. Dr. Michael Barot and Prof. Dr. Christof Geiß.
GPA: 9.87/10.
- 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.
Supervisor: Prof. Dr. Michael Barot.
GPA: 9.84/10.

Academical distinctions

- 2018 **International Conference on Representations of Algebras (ICRA) 2018 Award**, ICRA 2018 Award Committee, Prague, Czech Republic.
Notes: The ICRA Award is 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.
- 2011–2014 **Scholarship for studying abroad (Ph.D. program)**, Consejo Nacional de Ciencia y Tecnología (CONACyT), Mexico City, Mexico.
- 2010–2011 **Scholarship for the M.Sc. program in mathematics**, Consejo Nacional de Ciencia y Tecnología (CONACyT), Mexico City, Mexico.
- 2010 **Sotero Prieto Award**, Sociedad Matemática Mexicana, Tuxtla Gutiérrez, Mexico.
Notes: Awarded to the best undergraduate thesis in mathematics presented at a Mexican institution between June 2009 and May 2010 (three theses were recognized).
- 2009–2010 **PAPIIT Scholarship CB-2007/81948**, Universidad Nacional Autónoma de México (UNAM), Mexico City, Mexico.
- 2009–2011 **Student fellow**, Instituto de Matemáticas, Universidad Nacional Autónoma de México (IM-UNAM), Mexico City, Mexico.

Teaching experience & related duties

- 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 (9 tutors).
- 2018 **Lecturer**, Rheinische Friedrich-Wilhelms-Universität Bonn, Bonn, Germany, Summer Semester 2018.
Course: Graduate Seminar on Representation Theory (S4A2).
Topic: τ -tilting theory.
- 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).
- 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” imparted 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’s course taught through the Hausdorff Center for Mathematics Mentoring Program under the mentoring of Prof. Dr. Jan Schröer (29 lectures).

2010 **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

2017–2018 **Advisor for master thesis in mathematics**, *Rheinische Friedrich-Wilhelms-Universität Bonn*, Bonn, Germany.

Student: Aran Singh Tattar.
Thesis title: On Gorenstein k -categories.
Second advisor (Prüfer): Prof. Dr. Jan Schröer.
Date of completion of the thesis: 16.04.2018.

2015– **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).

- Abdalla Alia, “ τ -tilting theory” (Prof. Dr. Schröer, 2017)
- Islam Foniqi, “Finite Representation Type is Open” (Prof. Dr. Schröer, 2017)
- Daniel Rehn, “Modules without Self-extensions over Path Algebras” (Prof. Dr. Schröer, 2017)
- Bunlong Lay, “Crawley–Boevy–Kerner functor” (Prof. Dr. Schröer, 2017)
- Jonas Röhrig, “Stable Components of Auslander–Reiten Quivers of Representation-Finite Algebras” (Prof. Dr. Schröer, 2017).
- Leon Lang, “Asymptotic behaviour of Auslander–Reiten translations” (Prof. Dr. Schröer, 2017).
- Mário Marcelo da Conceição Cardoso, “The global dimension of endomorphism rings of generator-cogenerators over Nakayama algebras” (Prof. Dr. 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).

Research appointments

2017 **Hausdorff Research Institute for Mathematics**, Bonn, Germany.

Junior Hausdorff Trimester Program “Symplectic Geometry and Representation Theory”
Period: 01.11.2017–21.12.2017 (scheduled).

Notes: Leader of the group ‘Mirror symmetry, Fukaya categories and Auslander–Reiten theory’ (this is an administrative role).

2017 **University of California, Berkeley**, Berkeley CA, USA.

Host: Prof. Dr. Lauren Williams.
Period: 01.10.2017–31.10.2017.

2017 **Universität Stuttgart**, Stuttgart, Germany.

Host: Dr. Julian Külshammer.
Period: 03.04.2017–05.04.2017.

2017 **Mathematisches Forschungsinstitut Oberwolfach**, Oberwolfach, Germany.

Workshop: Representation Theory of Quivers and Finite Dimensional Algebras.
Period: 20.02.2017–25.02.2017.

2016 **Norges teknisk-naturvitenskapelige universitet (NTNU)**, Trondheim, Norway.

Hosts: Prof. Dr. Petter Bergh and Dr. Marius Thåle.
Period: 08.06.2016–22.06.2016.

2015 **Universität Stuttgart**, Stuttgart, Germany.

Host: Dr. Julian Külshammer.
Period: 02.11.2015–25.11.2015.

- 2015 **Instituto de Matemáticas, Universidad Nacional Autónoma de México (IM-UNAM)**, Mexico City, Mexico.
Hosts: Prof. Dr. Christof Geiß and Prof. Dr. Octavio Mendoza.
Period: 18.09.2015–18.10.2015.
- 2015 **Universität Stuttgart**, Stuttgart, Germany.
Host: Dr. Julian Külshammer.
Period: 07.07.2015–17.07.2015.
- 2015 **Norges teknisk-naturvitenskapelige universitet (NTNU)**, Trondheim, Norway.
Hosts: Prof. Dr. Petter Bergh and Dr. Marius Thaulé.
Period: 08.06.2015–14.06.2016.
- 2015 **Institut Mittag-Leffler, postdoc fellowship**, Djursholm, Sweden.
Program: Representation Theory.
Period: 22.03.2015–22.05.2015.
- 2015 **Universität Stuttgart**, Stuttgart, Germany.
Host: Dr. Julian Külshammer.
Period: 19.01.2015–30.01.2015.

Academical work

- 2018–2019 **Hausdorff Summer School: 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: The summer school is part of the academic program of the “Hausdorff School for Advanced Studies”.
- 2017–2018 **Oberseminar Darstellungstheorie**, Rheinische Friedrich-Wilhelms-Universität Bonn, Bonn, Germany, Winter Semester 2017/2018.
Notes: Organiser of the research seminar on representation theory at the Mathematisches Institute of the Rheinische Friedrich-Wilhelms-Universität Bonn.
- 2017 **Workshop: A_∞ -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: The workshop was part of the scientific program of the “Junior Hausdorff 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: The spring school is part of the graduate program of the SFB/Transregio 45.
- 2010 **Festival Matemático del Instituto de Matemáticas**, Instituto de Matemáticas, Universidad Nacional Autónoma de México (IM-UNAM), Mexico City, Mexico.
Member of the Organising Committee.
- 2009 **Social service for the undergraduate program in mathematics**, Facultad de Ciencias, Universidad Nacional Autónoma de México (FC-UNAM), Mexico City, Mexico.
Notes: Translation to the English language of the book “Un paseo por Hiperbolía” written by Prof. Dr. Michael Barot and edited by the Sociedad Matemática Mexicana (the translation is unpublished).

Editorial work

Referee for the following journals

- Advances in Mathematics (1)
- Algebras and Representation Theory (3)
- Applied Categorical Structures (1)
- Communications in Algebra (2)

- Czechoslovak Mathematical Journal (1)
- Frontiers of Mathematics in China (1)
- Glasgow Mathematical Journal (1 in progress)
- Hokkaido Mathematical Journal (1)
- Homology, Homotopy and Applications (1 in progress)
- International Mathematics Research Notices (2 + 1 in progress)
- Journal of Pure and Applied Algebra (1)

'Quick opinions' for the following journals

- Compositio Mathematica, Mathematische Zeitschrift, Proceedings of the London Mathematical Society, Transactions of the American Mathematical Society

Reviewer for the following services

- Mathematical Reviews (5 + 1 in progress)

List of publications

Preprints

- [1] Gustavo Jasso and Sondre Kvamme. An introduction to higher Auslander–Reiten theory. *arXiv:1610.05458*, oct 2016.
- [2] Gustavo Jasso and Julian Külshammer. Higher Nakayama algebras I: Construction. *arXiv:1604.03500*, apr 2016.

Published

- [1] Laurent Demonet, Osamu Iyama, and Gustavo Jasso. τ -tilting finite algebras, bricks and g -vectors. *Int. Math. Res. Not. IMRN*. Accepted for publication.
- [2] Osamu Iyama and Gustavo Jasso. Higher Auslander Correspondence for Dualizing R-Varieties. *Algebr. Represent. Theory*, 20(2):335–354, 2017.
- [3] Gustavo Jasso. n -abelian and n -exact categories. *Math. Z.*, 283(3-4):703–759, 2016.
- [4] Petter Andreas Bergh, Gustavo Jasso, and Marius Thaule. Higher n -angulations from local rings. *J. Lond. Math. Soc. (2)*, 93(1):123–142, 2016.
- [5] Gustavo Jasso. τ^2 -stable tilting complexes over weighted projective lines. *Adv. Math.*, 273:1–31, 2015.
- [6] Gustavo Jasso. Reduction of τ -tilting modules and torsion pairs. *Int. Math. Res. Not. IMRN*, (16):7190–7237, 2015.
- [7] Gustavo Jasso. The extended affine Lie algebra associated with a connected non-negative unit form. *J. Algebra*, 409:148–161, 2014.
- [8] Michael Barot, Christof Geiß, and Gustavo Jasso. Tubular cluster algebras II: Exponential growth. *J. Pure Appl. Algebra*, 217(10):1825–1837, 2013.

Proceedings

- [1] Gustavo Jasso and Julian Külshammer. Nakayama-type phenomena in higher Auslander–Reiten theory. In *Proceedings of the 17th Workshop and International Conference on Representations of Algebras (ICRA 2016)*.

- [1] Gustavo Jasso. *Differential graded categories. A representation theoretic approach*. In preparation.

Talks in conferences, workshops and seminars

Invited talks

- Sep 2018 **Advances in Representation Theory of Algebras (ARTA VII)**, *Instituto de Matemáticas, Universidad Nacional Autónoma de México (IM-UNAM)*, Mexico City, Mexico, (scheduled).
Title: TBD.
- Jun 2017 **Idun 75. A conference on representation theory of Artin algebras on the occasion of Idun Reiten's birthday**, *Norges teknisk-naturvitenskapelige universitet (NTNU)*, Trondheim, Norway.
Title: Type \mathbb{A} phenomena in higher Auslander–Reiten theory.
- Sep 2016 **Algebra and Representation Theory in the North (ARTIN) 48**, *Newcastle University*, Newcastle upon Tyne, UK.
Title: Mesh categories of type $\mathbb{Z}A_\infty$ and tubes in higher Auslander–Reiten theory.
- May 2016 **Second meeting of the US-Mexico Conference on Representation theory, Categorification, and Noncommutative Algebra**, *University of Southern California*, Los Angeles CA, USA.
Title: Higher Nakayama Algebras
- Mar 2016 **Cluster Algebras and Geometry**, *Westfälische Wilhelms-Universität Münster*, Münster, Germany.
Title: Higher Nakayama Algebras.
- Oct 2015 **Jornadas de Álgebra 2015**, *Instituto de Matemáticas, Universidad Nacional Autónoma de México (IM-UNAM)*, Mexico City, Mexico.
Title: From G -sets to dg modules.
- Jul 2015 **Workshop: Silting theory and related topics**, *Università degli Studi di Verona*, Verona, Italy.
Title: τ -rigid finite algebras.
- Jun 2015 **Advances in Representation Theory of Algebras IV (ARTA IV)**, *Centro de Investigación en Matemáticas, A.C. (CIMAT)*, Guanajuato, Mexico.
Title: From higher Auslander–Reiten theory to higher homological algebra.
- Mar 2015 **Maurice Auslander International Conference**, *Woods Hole Oceanographic Institute*, Woods Hole MA, USA.
Title: The d -abelian property of d -cluster-tilting subcategories.
- Dec 2014 **Homological Interactions between Representation Theory and Singularity Theory**, *University of Edinburgh*, Edinburgh, Scotland.
Title: Towards higher homological algebra.

Selected talks

- Aug 2018 **International Conference on Representations of Algebras (ICRA) 2018**, *Faculty of Mathematics and Physics, Charles University / Faculty of Electrical Engineering, Czech Technical University in Prague*, Prague, Czech Republic.
Title: Higher-dimensional Algebras of type \mathbb{A} and the higher-dimensional Waldhausen S -constructions.
Note: Plenary talk delivered as one of the recipients of the ICRA Award 2018.

- Sep 2017 **Advances in Representation Theory of Algebras VI: Geometry and Homology (ARTA VI)**, *Centre International de Rencontres Mathématiques (CIRM)*, Luminy, France.
Title: Triangulations of cyclic apeirotopes and higher dimensional tilting combinatorics.
- Feb 2017 **Workshop: Representation Theory of Quivers and Finite Dimensional Algebras**, *Mathematisches Forschungsinstitut Oberwolfach*, Oberwolfach, Germany.
Title: Spherical objects in higher Auslander–Reiten theory.
- Oct 2015 **Workshop: “Preprojective Algebras Interacting with Singularities, Cohen-Macaulay Modules and Weighted projective Spaces”**, *BIRS/Casa Matemática Oaxaca*, Oaxaca, Mexico.
Title: Higher Nakayama Algebras
- May 2015 **‘Tell us about...’ Seminar**, *Institut Mittag-Leffler*, Djursholm, Sweden.
Title: An introduction to τ -tilting theory.
- Aug 2014 **XVI International Conference on Representations of Algebras and Workshop**, *Tsinghua Sanya International Mathematics Forum*, Sanya, China.
Title: n -abelian categories and n -exact categories.
- Nov 2013 **Perspectives of Representation Theory of Algebras. Conference honoring Kunio Yamagata on the occasion of his 65th birthday**, *Nagoya University*, Nagoya, Japan.
Title: On the simplicial complex associated with support τ -tilting modules.
- Oct 2013 **Oberwolfach Seminar: Cluster Algebras and Representation Theory**, *Mathematisches Forschungsinstitut Oberwolfach*, Oberwolfach, Germany.
Title: τ -tilting theory.
- Aug 2012 **XV International Conference on Representations of Algebras and Workshop**, *Bielefeld University*, Bielefeld Germany.
Title: τ -tilting reduction.
- Aug 2010 **XIV International Conference on Representations of Algebras and Workshop**, Tokyo, Japan.
Title: The extended affine Lie algebra associated with a connected non-negative unit form.

Languages

Spanish, *native language*.

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

TOEFL iBT: 114/120 (November 2010).

German, *intermediate*.

Roughly at level B1.1 of the CEFRL (unofficial).