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Current employment

Professor of Mathematics. Instituto de Matemáticas, Universidad Nacional Autónoma de México (UNAM), tenured since September 2017.

Previous appointments

Associate Professor of Mathematics. Instituto de Matemáticas, UNAM, 2013-2017.
Postdoctoral Fellow. Mathematisches Institut, Universität Bonn, Germany. 2011-2013.
Research Assistant. Department of Mathematics, Northeastern University, Boston, MA, USA. Summer semesters, 2007-2010. Supervisor: Andrei Zelevinsky.
Teaching Assistant. Department of Mathematics, Northeastern University, USA. 2006-2010.
Teaching Assistant. Facultad de Ciencias, UNAM, Mexico. 2002-2006.

Education

Ph.D. Mathematics. Advisor: Andrei Zelevinsky. Northeastern University, USA. 2010.
M.Sc. Mathematics. Instituto de Matemáticas, UNAM, Mexico. 2006.
B.Sc. Mathematics. Facultad de Ciencias, UNAM, Mexico. 2004.

Honours

Cátedra Marcos Moshinsky for young researchers, awarded by UNAM's Physics Institute and the Marcos Moshinsky Foundation. 2018.
Level II National Researcher at the National Researchers System (Sistema Nacional de Investigadores, SNI, Mexico) since January 2018.
Level I National Researcher at SNI from January 2015 to December 2017.
Nomination by Andrei Zelevinsky to *Northeastern University's 2010 Outstanding Graduate Student Award in Research - Life Sciences, Physical Sciences, and Engineering*. 2010.
Sotero Prieto Prize, awarded by the Mexican Mathematical Society to the best Undergraduate Thesis in Mathematics. 2004.
Mención Honorífica (equivalent to *Summa Cum Laude*) at undergraduate thesis defense. 2004.

Research grants

PAPIIT-IN112519 "Álgebras de Caldero-Chapoton, relaciones de madeja y bases genéricas". 2019–2020.
CONACyT-238754 "Carcajes y especies con potenciales, álgebras de superficies y teoría de Teichmüller: Teoría, algoritmos y visualización". Category: Young Researcher. 2015–2019.
PAPIIT-IA102215 "Triangulaciones de superficies, álgebras Jacobianas y equivalencias derivadas". Grant proposal and final report both evaluated as "excellent". 2015–2017.

Publications

1. *Quivers with potentials associated to triangulated surfaces.*
Proceedings of the London Mathematical Society 98 (2009), No. 3, 797-839. 43 pages.
2. *Cones and convex bodies with modular face lattices.* With Max Neumann-Coto and Martha Takane Imay.
Proceedings of the American Mathematical Society 140 (2012), 4337-4350. 14 pages.
3. *Quivers with potentials associated to triangulated surfaces, part III: Tagged triangulations and cluster monomials.* With Giovanni Cerulli Irelli.
Compositio Mathematica 148 (2012), No. 06, 1833-1866. 34 pages.

4. *Linear independence of cluster monomials for skew-symmetric cluster algebras.*
With Giovanni Cerulli Irelli, Bernhard Keller and Pierre-Guy Plamondon.
Compositio Mathematica Vol. 149 (2013), No. 10, 1753-1764. 12 pages.
5. *Strongly primitive species with potentials: aims and limitations.*
Based on joint work with Andrei Zelevinsky.
European Mathematical Society. Oberwolfach Reports Vol. 10, Issue 4 (2013). 3404-3407.
(Report No. 58/2013, DOI: 10.4171/OWR/2013/58). 4 pages.
6. *Caldero-Chapoton algebras.* With Giovanni Cerulli Irelli and Jan Schröer.
Transactions of the American Mathematical Society 367 (2015), 2787-2822. 32 pages.
7. *Strongly primitive species with potentials I: Mutations.* With Andrei Zelevinsky.
Boletín de la Sociedad Matemática Mexicana (Tercera serie), Vol. 22 (2016), Issue 1, 47-115.
69 pages.
8. *On triangulations, quivers with potentials and mutations.*
Contemporary Mathematics (American Mathematical Society), Vol. 657 "Mexican Mathematicians Abroad: Recent Contributions" (Bárcenas, Galaz-García, Moreno Rocha, Eds.), 2016. 103-127. 25 pages.
9. *Quivers with potentials associated to triangulated surfaces, part IV: Removing boundary assumptions.*
Selecta Mathematica (New series), Vol. 22 (2016), Issue 1, 145-189. 45 pages.
10. *The representation type of Jacobian algebras*. With Christof Geiss and Jan Schröer.
Advances in Mathematics, Vol. 290 (2016), 364-452. 89 pages.
11. *Species with potential arising from surfaces with orbifold points of order 2, Part I: One choice of weights*. With Jan Geuenich.
Mathematische Zeitschrift, Vol. 286 (2017), Issue 3-4, 1065–1143. 79 pages.
12. *On a family of Caldero-Chapoton algebras that have the Laurent phenomenon*.
With Diego Velasco.
Journal of algebra, Vol. 520 (2019), 90–135. 46 pages.
13. *Species with potential arising from surfaces with orbifold points of order 2, Part II: Arbitrary weights*. With Jan Geuenich.
International Mathematics Research Notices, Volume 2020 (2020), Issue 12, 3649-3752.
104 pages.
14. *Derived invariants for surface cut algebras II: the punctured case.* With Claire Amiot and Pierre-Guy Plamondon.
To appear in Communications in Algebra.

Selected talks

Oberseminar Darstellungstheorie. Mathematisches Institut, Universität Bonn. 2020.
Seminario di Algebra e Geometria. Dipartimento di Matematica "Guido Castelnuovo", Università di Roma La Sapienza. 2020.
Latin American Algebra Colloquium (*Coloquio Latinoamericano de Álgebra*). Plenary talk. El Colegio Nacional, México. 2019.
Cluster Algebras 2019. Research Institute for Mathematical Sciences, Kyoto University, Japan.
Tropical Geometry meets Representation Theory II. Mini-course. University of Leicester. 2019.
First joint meeting of the Colombian and Mexican Mathematical Societies. Mini-course consisting of two plenary lectures. Universidad del Norte, Barranquilla, Colombia. 2018.

Cluster Algebras, 20 years on. CIRM, Luminy, France. 2018.
Spring School Cluster Algebras in Mathematical Physics (*CAMP*), Institut für Mathematik, Johannes Gutenberg-Universität Mainz. 2017.
International Conference on Representation Theory and Commutative Algebra: A conference in honor of Jerzy Weyman's 60th Birthday. University of Connecticut, USA 2015.
Cluster Algebras and Related Topics. MFO, Oberwolfach, Germany. 2013.
Algebra, Combinatorics and Representation Theory: In Memory of Andrei Zelevinsky. Northeastern University, Boston, MA, USA. 2013.

Editorial board Associate Editor, *Boletín de la Sociedad Matemática Mexicana (3rd series),* since Dec. 2018.

Advisory board Member of the Evaluating Committee of UNAM's Mathematics Institute since March 2019.

Organization
Advances in Representation Theory of Algebras 7, celebrating José Antonio de la Peña's 60th birthday. Instituto de Matemáticas, UNAM, México.
Cluster Varieties and Mathematical Physics. Casa Matemática Oaxaca, Mexico. 2018.
75 years of Mathematics in Mexico. Instituto de Matemáticas, UNAM, México. 2017.
Third meeting of the US-Mexico Conference on Representation Theory, Categorification, and Non-commutative algebra. Instituto de Matemáticas, UNAM, México. 2017.
Special session on Calabi-Yau manifolds and Calabi-Yau algebra. Mathematical Congress of the Americas, McGill University, Montreal, Quebec, Canada. 2017.
Encuentro Nacional de Jóvenes Investigadores en Matemáticas (ENJIM). Instituto de Matemáticas, UNAM, México. 2015.
Modern algorithmic techniques in computer science for Big Data: A Workshop with Prof. John Hopcroft. INFOTEC-DF, Mexico. 2015.

Research collaboration and supervision 15 Visitors, including Raymundo Bautista (UNAM), Ben Davison (Edinburgh), Anna Felikson (Durham), Jan Geuenich (Bonn, now in Bielefeld), John Hopcroft (Cornell), Katerina Hristova (Warwick), Osamu Iyama (Nagoya), Lang Mou (UC, Davis) Pierre-Guy Plamondon (Orsay), Jan Schröer (Bonn), Michael Shapiro (Michigan), Tom Sutherland (Pavia, now in Lisbon). 1 Postdoctoral Fellow (Jonathan Wilson). 2 Ph.D. Students (Jan Geuenich, Ph.D. degree obtained in 2017, though I was not recognized officially as his Advisor; Diego Velasco, Ph. D. degree obtained in 2019). 3 M.Sc. Students (M.Sc. degrees obtained in 2019, 2017 and 2017). 2 Undergraduate Students (both of them obtaining the equivalent to *Summa Cum Laude*; one of them, winner of the *Sotero Prieto Prize*, awarded by the Mexican Mathematical Society to the best undergraduate thesis in Mathematics).

Teaching experience 39 courses taught (3 at the Graduate level as Professor, 13 at the Undergraduate level as Professor, 1 at the Graduate level as Teaching Assistant, 22 at the Undergraduate level as Teaching Assistant), 29 of them at UNAM, 10 at Northeastern University.

Languages Spanish (native speaker), English (fluent, TOEFL-CBT score 263/300 in 2005), German (B1).

Programming language Python.