

**Research interests:**

Homological Algebra, (Hom)-Lie  $n$ -algebras, (Hom)-Leibniz  $n$ -algebras, Category Theory, Lie-Rinehart algebras, other Non-Associative Algebras, Category Theory.

**Published articles:**

- Casas, J. M.; Rego, N. Pacheco *On the universal  $a$ -central extension of the semi-direct product of Hom-Leibniz algebras.* Bull. Malays. Math. Sci. Soc. 39 (2016), no. 4, 1579–1602.
- Casas, J. M.; Ladra, M.; Omirov, B. A.; Turdibaev, R. *On the algebraic properties of the human ABO-blood group inheritance pattern.* ANZIAM J. 58 (2016), no. 1, 78–95.
- Casas, J. M.; Insua, M. A.; Ladra, M.; Ladra, S. *Test for Leibniz  $n$ -algebra structure.* Linear Algebra Appl. 494 (2016), 138–155.
- Casas, J. M.; Insua, M. A.; Pacheco, N. *On universal central extensions of Hom-Lie algebras.* Hacet. J. Math. Stat. 44 (2015), no. 2, 277–288.
- Casas, J. M.; Khmaladze, E.; Pacheco Rego, N. *Non-abelian homology of Hom-Lie algebras and applications.* Proc. A. Razmadze Math. Inst. 167 (2015), 99–106.
- Boyaci, Y.; Casas, J. M.; Datuashvili, T.; Uslu, E. Ö. *Actions in modified categories of interest with application to crossed modules.* Theory Appl. Categ. 30 (2015), No. 25, 882–908.
- Casas, J. M.; Omirov, B. A.; Rozikov, U. A. *Solvability criteria for the equation  $x^q = a$  in the field of  $p$ -adic numbers.* Bull. Malays. Math. Sci. Soc. (2) 37 (2014), no. 3, 853–863.
- Casas, José Manuel; Casado, Rafael F.; Khmaladze, Emzar; Ladra, Manuel *Universal enveloping crossed module of a Lie crossed module.* Homology Homotopy Appl. 16 (2014), no. 2, 143–158.
- Casas, J. M.; Insua, M. A.; Pacheco Rego, N. *On universal central extensions of Hom-Leibniz algebras.* J. Algebra Appl. 13 (2014), no. 8, 1450053, 22 pp.
- Casas, J. M.; Ladra, M.; Omirov, B. A.; Rozikov, U. A. *On evolution algebras.* Algebra Colloq. 21 (2014), no. 2, 331–342.
- Casas, J. M.; Inassaridze, N.; Khmaladze, E.; Ladra, M. *Adjunction between crossed modules of groups and algebras.* J. Homotopy Relat. Struct. 9 (2014), no. 1, 223–237.

- Casas, José Manuel; Van der Linden, Tim *Universal central extensions in semi-abelian categories.* Appl. Categ. Structures 22 (2014), no. 1, 253–268.
- Casas, José M.; Datuashvili, Tamar; Ladra, Manuel *Left-right noncommutative Poisson algebras.* Cent. Eur. J. Math. 12 (2014), no. 1, 57–78.
- Casas, J. M.; Khudoyberdiyev, A. Kh.; Ladra, M.; Omirov, B. A. *On the degenerations of solvable Leibniz algebras.* Linear Algebra Appl. 439 (2013), no. 2, 472–487.
- Casas, José Manuel; Khmaladze, Emzar; Ladra, Manuel *Low-dimensional non-abelian Leibniz cohomology.* Forum Math. 25 (2013), no. 3, 443–469.
- Casas, J. M.; Ladra, M.; Omirov, B. A.; Rozikov, U. A. *On nilpotent index and dbaricity of evolution algebras.* Linear Algebra Appl. 439 (2013), no. 1, 90–105.
- Casas, J. M.; Datuashvili, T.; Ladra, M. *Actor of a Lie-Leibniz algebra.* Comm. Algebra 41 (2013), no. 4, 1570–1587.
- Casas, J. M.; Ladra, M.; Omirov, B. A.; Karimjanov, I. A. {it Classification of solvable Leibniz algebras with naturally graded filiform nilradical.} Linear Algebra Appl. 438 (2013), no. 7, 2973–3000.
- Casas, J. M.; Ladra, M.; Omirov, B. A.; Karimjanov, I. A. *Classification of solvable Leibniz algebras with null-filiform nilradical.* Linear Multilinear Algebra 61 (2013), no. 6, 758–774.
- Casas, J. M.; Inassaridze, N.; Ladra, M. *On degree of derived functors.* Proc. A. Razmadze Math. Inst. 159 (2012), 11–20.
- Aytekin, A.; Casas, J. M.; Uslu, E. Ö. *Semi-complete crossed modules of Lie algebras.* J. Algebra Appl. 11 (2012), no. 5, 1250096, 24 pp.
- Casas, J. M.; Datuashvili, T.; Ladra, M.; Uslu, E. Ö. *Actions in the category of precrossed modules in Lie algebras.* Comm. Algebra 40 (2012), no. 8, 2962–2982.
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- Casas, J. M.; Insua, M. A.; Ladra, M.; Ladra, S. *An algorithm for the classification of 3-dimensional complex Leibniz algebras.* Linear Algebra Appl. 436 (2012), no. 9, 3747–3756.

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- Casas, José Manuel; Khmaladze, Emzar; Ladra, Manuel; Van der Linden, Tim *Homology and central extensions of Leibniz and Lie  $n$ -algebras.* Homology Homotopy Appl. 13 (2011), no. 1, 59–74.
- Casas, J. M. *Obstructions to Lie-Rinehart algebra extensions.* Algebra Colloq. 18 (2011), no. 1, 83–104.
- Casas, José Manuel; Inassaridze, Nick; Ladra, Manuel *Homological aspects of Lie algebra crossed modules.* Manuscripta Math. 131 (2010), no. 3–4, 385–401.
- Casas, J. M.; Datuashvili, T.; Ladra, M. *Universal strict general actors and actors in categories of interest.* Appl. Categ. Structures 18 (2010), no. 1, 85–114.
- Casas, J. M.; Khmaladze, E.; Ladra, M. *Higher Hopf formula for homology of Leibniz  $n$ -algebras.* J. Pure Appl. Algebra 214 (2010), no. 6, 797–808.
- Casas, José Manuel; Datuashvili, Tamar; Ladra, Manuel *Actor of a pre-crossed module.* Comm. Algebra 37 (2009), no. 12, 4516–4541.
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- Casas, José Manuel *On cohomology of Lie-Rinehart algebras.* XV International Workshop on Geometry and Physics, 266–271, Publ. R. Soc. Mat. Esp., 11, R. Soc. Mat. Esp., Madrid, 2007.
- Casas, José Manuel; Insua, Manuel A.; Ladra, Manuel *Poincaré-Birkhoff-Witt theorem for Leibniz  $n$ -algebras.* J. Symbolic Comput. 42 (2007), no. 11–12, 1052–1065.
- Casas, J. M.; Ladra, M. *Computing low dimensional Leibniz homology of some perfect Leibniz algebras.* Southeast Asian Bull. Math. 31 (2007), no. 4, 683–690.
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- Casas, J. M.; Datuashvili, T. *Noncommutative Leibniz-Poisson algebras.* Comm. Algebra 34 (2006), no. 7, 2507–2530.
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- Vieites Rodríguez, A. M.; Casas Mirás, J. M. *Derivations of crossed modules*. Extracta Math. 14 (1999), no. 1, 63–67.
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- Casas, J. M.; Faro, E.; Vieites, A. M. *Abelian extensions of Leibniz algebras*. Comm. Algebra 27 (1999), no. 6, 2833–2846.
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#### **Participation in Scientific Grant Projects:**

- (Co)homología de álgebras de Leibniz (**XUGA37101A97**), Xunta de Galicia, 1997–1999.
- Generalizaciones de las álgebras de Lie: álgebras de Leibniz y álgebras de Nambu (**PGIDT00PXi37101PR**), Xunta de Galicia, 2000–2002.
- Álgebra homológica de módulos cruzados (**BFM2000-0523**), Ministerio de Ciencia y Tecnología, 2000–2003.
- Homotopical álgebra and (co)homology of groups, algebras and crossed modules (**PST.CLG.979167**), Nato Science Program, 2002–2004.
- Módulos cruzados, operadas algebraicas y (co)homología (**BFM2003-04686-C02-02**), Ministerio de Ciencia y Tecnología, 2003–2006.
- Módulos cruzados, operadas algebraicas y (co)homología (**PGIDIT04-PXIC37101PN**), Xunta de Galicia, 2004–2007.
- Investigaciones homológicas de varias generalizaciones de grupos y álgebras de Lie (**MTM2006-1538-C02-02**), Ministerio de Educación y Ciencia, 2006–2009.
- K-theory, non-commutative geometry, homology theories, homotopy theory, operator and normed algebras (**06-1000017-8609**), INTAS, 2007–2009.
- Estructuras algebraicas con aplicaciones a la Física y a la geometría (**PGIDIT06PXIB371128PR**), Xunta de Galicia, 2006–2009.
- Métodos computacionales y homológicos en álgebras no asociativas (**MTM2009-14464-C02-02**), Ministerio de Ciencia e Innovación, 2010–012.
- Computación en álgebras no asociativas y álgebras de Hopf (**Incite09 207 2150PR**), Xunta de Galicia, 2009–2012.
- Homología, Homotopía e invariantes categóricos en grupos y álgebras no asociativas (**MTM2013-43687-P**), Ministerio de Ciencia e Innovación, 2014–2016.
- Homología, Homotopía e invariantes categóricos en grupos y álgebras no asociativas (**MTM2013-43687-P**), Ministerio de Ciencia e Innovación, 2017–2020.

#### **Theses Supervised**

- Extensiones abelianas, cruzadas y 2-extensiones cruzadas de módulos cruzados, Ana María Vieites Rodríguez, 1999.
- Extensiones centrales universales de álgebras Hom-Leibniz, Natàlia Maria de Bessa Pacheco Rego, 2014.
- Una "possible razón de ser" del cálculo diferencial elemental en el ámbito de la modelización funcional, Catarina Oliveira, 2015.