

Juan VIU-SOS


DOUTOR EM MATEMÁTICA
– SINGULARIDADES, GEOMETRIA E TOPOLOGIA –

Dpto. de Matemáticas e Informática, 276A
ETSI Caminos, Canales y Puertos
Universidad Politécnica de Madrid
C/ Prof. Aranguren, 3
28040 Madrid (ESPAÑA)
☎ +34 91 06 74402
✉ jviusos@math.cnrs.fr
🌐 [jviusos.github.io](https://github.com/jviusos)










Introdução

Posto atual: Professor Permanente na *Universidad Politécnica de Madrid* (UPM), Espanha.



Linhas de pesquisa: singularidades, topologia de pequena dimensão, arranjos de hiperplanos, integração motivica, funções zeta, campos de vetores logarítmicos, períodos efetivos, álgebra computacional ([Sagemath](#) ).

Artigos e preprints

Publicações

- **Introduction to p -adic and motivic integration, zeta functions and invariants of singularities** , *In p -adic analysis, arithmetic and singularities, Contemporary Mathematics (778), p.103–176. Amer. Math. Soc. (2022).*
- **On the equality of periods of Kontsevich-Zagier** , com J. Cresson, *Journal de théorie des nombres de Bordeaux, Volume 34 (2022) no. 2, pp. 323-343*.
- **Motivic zeta functions on \mathbb{Q} -Gorenstein varieties** , com E. León-Cardenal, J. Martín-Morales e W. Veys, *Advances in Mathematics 370 (2020).*
- **Configurations of points and topology of real line arrangements** , com B. Guerville-Ballé, *Mathematische Annalen 374 (2019), no. 1-2, 1–35.*
- **Fundamental groups of real arrangements and torsion in the lower central series quotients** , com E. Artal-Bartolo e B. Guerville-Ballé, *Experimental Mathematics 29 (2020), no. 1, 28–35.*
- **A semi-canonical reduction for periods of Kontsevich-Zagier** , *International Journal of Number Theory 17 (2021), no. 01, 147-174.*
- **On the minimal degree of logarithmic vector fields of line arrangements** , com B. Guerville-Ballé, *Proceedings of the XIII International Conference Zaragoza-Pau on Mathematics and its Applications, Monografías Matemáticas García de Galdeano, 40, 61-66, 2015.*

Preprints

- preprint ○ **Connectedness and combinatorial interplay in the moduli space of line arrangements** , arXiv:2309.00322, com B. Guerville-Ballé.
- preprint ○ **Combinatorics of line arrangements and dynamics of polynomial vector fields** , arXiv:1412.0137, com B. Guerville-Ballé.

Paquetes desenvolvidos em Sagemath

- 2012 ○ **Computing the Igusa and Topological zeta functions of a Newton non-degenerated polynomial** 

Tese de doutorado

- 2012/2015 ◦ **"Periods and line arrangements: contributions to the Kontsevich-Zagier periods conjecture and to the Terao conjecture."** [↗](#), *Université de Pau et des Pays de l'Adour/Universidad de Zaragoza*, Pau/Zaragoza, França/Espanha.

Tese em Matemáticas (*teoría de números, geometría algebraica e campos de vetores*) no LMAP (Équipe Algèbre et Géométrie). Orientadores: Enrique Artal, Jacky Cresson y Vincent Florens. **Qualificação "Très honorable"/"Cum laude"**.

Banca e corretores

- Pierre CARTIER (IHES, Corr.–Presidente)
- David MOND (Univ. of Warwick)
- Jean VALLÈS (Univ. de Pau)
- Masahiko YOSHINAGA (Hokkaido Univ., Corr.)
- Michel WALDSCHMIDT (Univ. Paris VI)
- Jacques-Arthur WEIL (Univ. de Limoges)
- Michel GRANGER (Univ. d'Angers, Corr.)

Postos e formação acadêmica

Postos precedentes

- 2020/2024 ◦ **Professor Associado na *Universidad Politécnica de Madrid***, Espanha.
- 2019/2020 ◦ **Pós-doutorando no *IMPA - Instituto de Matemática Pura e Aplicada* com uma bolsa CAPES/PNPD**, Rio de Janeiro, Brasil.
- 2017/2019 ◦ **Pós-doutorando no *ICMC/Universidade de São Paulo* com uma bolsa FAPESP**, São Carlos, Brasil.
- 2016/2017 ◦ **ATER (professor temporário de ensino e pesquisa) no *Institut Fourier /Université Grenoble Alpes***, França.
- 2015/2016 ◦ **ATER na *Université de Pau et des Pays de l'Adour***, França.
- 2012/2015 ◦ **Bolsa de doutorado conjunto, *Université de Pau/Universidad de Zaragoza***, França/Espanha.

Formação precedente

- 2011/2012 ◦ **Mestrado "*Iniciación a la Investigación en Matemáticas*"**, *Universidad de Zaragoza*, Bilbao-Zaragoza-Logroño, Espanha.
- Dissertação de mestrado: "Funciones zeta y poliedro de Newton: aspectos teóricos y computacionales". Orientador: Enrique Artal.
- 2010/2011 ◦ **Mestrado "*Mathématiques, Modélisation et Simulation*"**, *Université de Pau et des Pays de l'Adour*, França.
- Dissertação de mestrado: "Nœuds, entrelacs et coloriage". Orientador: Vincent Florens.
- 2005/2011 ◦ **Licenciado em Matemáticas (graduação)**, *Universidad de Zaragoza*, Zaragoza, Espanha.

Atividades de pesquisa

Seminários e minicursos proferidos

- 2020 ◦ **Minicurso (4,5h) "*An introduction to geometric motivic integration*"**, *Thematic Program on Singularity Theory*, IMPA, Rio de Janeiro, Brasil.
- 2018 ◦ **Minicurso (20h) "*An introduction to p -adic and motivic integration, zeta functions and new stringy invariants of singularities*"**, *Mini-cours pour doctorants*, ICMC-USP, São Carlos, Brasil.
- 2017 ◦ **Minicurso (7h) "*Line arrangements: combinatorics, geometry and topology*"**, *Mini-cours pour doctorants*, ICMC-USP, São Carlos, Brasil.

Palestras em congressos nacionais e internacionais

- 2024 ◦ **A combinatorial approach to moduli spaces of line arrangements**, *18th International Workshop on Real and Complex Singularities*, Universidad de València, Espanha.

- **A combinatorial approach to moduli spaces of line arrangements**, XVIII EACA Conference 2024, Universidad Complutense de Madrid, Espanha.
- 2023 ○ **The geometric Kontsevich-Zagier conjecture**, Workshop on "Periods", Universidade de Lisboa, Portugal.
- **Zeta functions, abelian orbifold resolutions of singularities and the geometry of curves in weighted projective planes**, VI Congreso de Jóvenes Investigadores de la RSME (Sesión de singularidades), Universidad de León, Espanha.
- 2022 ○ **Zeta functions, orbifold motivic measures and \mathbb{Q} -resolutions of singularities**, Summer School on Motivic Integration, Henrich Heine University, Düsseldorf, Alemania.
- **On the geometry of curves in weighted projective planes and the Monodromy Conjecture for some surface singularities**, 17th International Workshop on Real and Complex Singularities, Univ. São Paulo, São Carlos, Brasil.
- 2021 ○ **On zeta functions, weighted blow-ups and the Monodromy Conjecture for some surface singularities**, Singularities in the Midwest (online edition), Univ. Wisconsin-Madison, USA.
- 2020 ○ **Generación de variantes aleatorias de exámenes**, Workshop ENSEMAT 2020 "Usos y Avances en la Docencia de las Matemáticas en las Enseñanzas Universitarias", Universidad Politécnica de Madrid, Espanha.
- **Sobre la conjetura de la monodromia para singularidades cuasihomogéneas de superficie**, Seminario de Álgebra, Geometría y Topología, Universidad Complutense de Madrid, Espanha.
- **Embedded topology and combinatorics of line arrangements: some counter-examples using GeoGebra**, 14th Workshop of Young Researchers in Mathematics, UCM-UAM-UC3M-IMI, Espanha.
- 2019 ○ **Configurations of points and new Zariski pairs of line arrangements**, Workshop on Topological and Analytical Methods in Singularity Theory, CIMAT - Guanajuato, México.
- **Classification of trihedral singularities $\mathbb{C}^3/G_{d,q}$ via arithmetic properties and motivic zeta functions**, Workshop "Zeta functions, singularities and applications", CIMAT - Zacatecas, México.
- **A new formula for the motivic and topological zeta functions from \mathbb{Q} -resolution of singularities**, 12th Mini Workshop on Singularities, Geometry and Differential Equations and 1st Meeting on Foliations and Singularities, UFES, Vitoria, Brasil.
- 2018 ○ **Motivic zeta functions on \mathbb{Q} -Gorenstein varieties and \mathbb{Q} -resolution of singularities**, Lipschitz Geometry of Singularities, Oaxaca, México.
- **Motivic zeta functions, orbifold motivic measures and \mathbb{Q} -resolutions of singularities (Short Communication)**, International Congress of Mathematicians 2018, Rio de Janeiro, Brasil.
- **Motivic zeta functions, orbifold motivic measures and \mathbb{Q} -resolutions of singularities**, 15th International Workshop on Real and Complex Singularities, ICMC-USP, Brasil.
- 2017 ○ **Combinatorics and topology of line arrangements via configurations of points**, XI Encontro Regional de Topologia, USP-UNESP-UFSCar, Brasil.
- **A geometrical construction of Zariski pairs of real line arrangements**, VIII Rencontre Pau-Zaragoza d'Algèbre et Géométrie, Université de Pau, França.
- **A geometrical construction of Zariski pairs of real line arrangements**, IV Congreso de Jóvenes Investigadores de la RSME (Sesión de singularidades), Universidad de Valencia, Espanha.
- **Configurations of points and topology of real line arrangements**, Congreso bienal de la Real Sociedad Matemática Española 2017, Universidad de Zaragoza, Espanha.
- 2016 ○ **A semi-canonical reduction for periods of Kontsevich-Zagier**, Singularities and Topology, Laboratoire J. A. Diudonné, Université de Nice, França.
- **A semi-canonical reduction for periods of Kontsevich-Zagier**, Autour des Équations Différentielles, Institut Fourier, Université de Grenoble Alpes, França.
- 2015 ○ **On the geometry of line arrangements and dynamics of polynomial vector fields**, Geometry, topology and combinatorics of hyperplane arrangements and related problems, Universidad de Zaragoza, Espanha.

- **Una reducción semi-canónica para periodos de Kontsevich-Zagier**, *III Congreso de Jóvenes Investigadores de la RSME*, Universidad de Murcia, Espanha.
- **On the geometry of line arrangements and polynomial vector fields**, *Functional Equations in LIMoges 2015*, XLIM, Université de Limoges, França.
- 2014 ○ **On periods of Kontsevich-Zagier**, *The 1st Workshop of JSPS-MAE Sakura Program "Geometry and Combinatorics of Hyperplane Arrangements and Related Problems"*, Hokkaido University, Japão.

Estágios de pesquisa

- 2015 ○ **Hokkaido University and Tokyo Gakugei University (3 semaines) convidado por M. Yoshinaga and A. Yasuhara**, Japão.
- 2014 ○ **Hokkaido University (3 semaines) convidado por M. Yoshinaga**, Japão.
- 2011 ○ **Laboratoire de Mathématiques et de leurs Applications (1 month) convidado por V. Florens**, *Université de Pau et des Pays de l'Adour*, França.

Prêmios

- 2014 ○ **1er premio poster "Periods of Kontsevich-Zagier: conjectures and reduction"**, *Journées de l'École Doctoral*, Université de Pau et des Pays de l'Adour.
- 2013 ○ **2º premio poster "Periods as volumes and the Kontsevich-Zagier conjecture"**, *II Congreso de Jóvenes Investigadores de la RSME*, Universidad de Sevilla, Espanha.

Postos de responsabilidade e outros

- 2024 ○ **Organizador do IberoSing International Workshop 2024: Low-dimensional Topology & Singularity Theory**, URL: <https://iberosing.github.io/IW24/>, Univ. Politécnica de Madrid, Madrid, Espanha.
- 2023 ○ **Organizador do IberoSing International Workshop 2023: Mirror symmetry & Hodge ideals**, URL: <https://iberosing.github.io/IW23/>, Univ. de Granada, Granada, Espanha.
- 2022 ○ **Organizador do IberoSing International Workshop 2022**, URL: <https://eventos.ucm.es/86046/detail/iberosing-international-workshop-2022.html>, Univ. Complutense de Madrid, Espanha.
- 2020/... ○ **Organizador do seminário virtual "Iberoamerican Webminar of Young Researchers in Singularity Theory and related topics"**, URL: iberosing.github.io, Instituto de Matemática Interdisciplinar (IMI).
- 2013/2014 ○ **Organizador do Seminário de doutorandos do LMAP**, Université de Pau et des Pays de l'Adour.

Experiencia em ensino

Professor associado: Universidad Politécnica de Madrid (Espanha)

- 2024/2025 ○ **Topología**, *Teoria e exercícios*, S3 Grado en Matemáticas.
- **Informática**, *Teoria e práticas de laboratório*, S1 Ingeniería Civil.
- 2023/2024 ○ **Topología**, *Teoria e exercícios*, S3 Grado en Matemáticas.
- **Informática**, *Teoria e práticas de laboratório*, S1 Ingeniería Civil.
- 2022/2023 ○ **Topología**, *Teoria e exercícios*, S3 Grado en Matemáticas.
- **Informática**, *Teoria e práticas de laboratório*, S1 Ingeniería Civil.
- 2021/2022 ○ **Informática**, *Teoria e práticas de laboratório*, S1 Ingeniería Civil.
- **Cálculo I**, *Teoria e exercícios*, S1 Ingeniería Naval.
- 2020/2021 ○ **Estadística y Optimización**, *Teoria e exercícios*, S2 Ingeniería Civil.
- **Cálculo I**, *Teoria e exercícios*, S1 Ingeniería Naval.

ATER: Université Grenoble Alpes (76,5h, França)

2016/2017 ○ **MATH101-Langage mathématique, algèbre et géométrie**, *Teoria e exercícios*, L1 Math/Info.

ATER: Université de Pau (192h, França)

2015/2016 ○ **Initiation à la modélisation statistique**, *Teoria e exercícios*, L1 MIASHS.

○ **Statistiques Descriptives**, *Teoria, exercícios e práticas de laboratório*, L1 MIASHS-Math-SDT.

○ **Fonctions et intégrales**, *Exercícios*, L1 Mathématiques.

○ **Équations différentielles I**, *Exercícios*, L2 Mathématiques.

Monitor associado: Université de Pau (128h, França)

2014/2015 ○ **Arithmétique**, *Exercícios*, L1 Mathématiques.

○ **Algèbre Linéaire II**, *Exercícios*, L1 MIASHS.

○ **Équations différentielles I**, *Exercícios*, L2 Mathématiques.

2013/2014 ○ **Arithmétique**, *Exercícios*, L1 Mathématiques.

○ **Algèbre Linéaire II**, *Exercícios*, L1 MASS.

○ **Topologie et Calcul Différentiel**, *Exercícios*, L2 Mathématiques.

Participação em escolas científicas

2019 ○ **School “XX School of Mathematics Lluís Santaló 2019: p-Adic Analysis, Arithmetic and Singularities”**, *Universidad Internacional Menendez Pelayo*, Santander, Espanha.

2018 ○ **Course “Post-quantum Cryptography”**, *BCAM&UPV/EHU*, Bilbao, Espanha.

○ **International school “Singularity Theory”**, *ICMC-USP*, São Carlos, Brasil.

○ **International school “Singularities and Lipschitz Geometry”**, *Universidad Nacional Autónoma de México*, Cuernavaca, México.

2017 ○ **Graduate school “Introduction To Geometric Analysis: The Atiyah-Singer Index Theorem”**, *BCAM-UPV/EHU*, Bilbao, Espanha.

2016 ○ **School “III EACA International School on Computer Algebra and its Applications”**, *Universidad de Sevilla*, Sevilla, Espanha.

2014 ○ **Clay Mathematics Institute Summer School 2014 “Periods and Motives: Feynman amplitudes in the 21st century”**, *Instituto de Ciencias Matemáticas*, Madrid, Espanha.

2013 ○ **School “Multiple Zeta Values, Multiple Polylogarithms and Quantum Field Theory”**, *Instituto de Ciencias Matemáticas*, Madrid, Espanha.

○ **Graduate School “New aspects on Singularity Theory”**, *Instituto de Ciencias Matemáticas*, Madrid, Espanha.

2012 ○ **Doc-Course “Singularities and Applications”**, *Universidad de Sevilla*, Sevilla, Espanha.

○ **Doc-Course “Cohomología de haces, dualidad de Verdier y cohomología de intersección”**, *Universidad Complutense de Madrid*, Madrid, Espanha.

Competências

Línguas

○ **Espanhol** – Língua materna

○ **Francês** – Fluente Nível C2 (*DalF C1*, 2014)

○ **Inglês** – Fluente Nível C1 (*FCE*, 2013)

○ **Português** – Fluente Nível B2

Informática

- Sage, Maple, Mathematica.
- Fortran, Matlab, R.
- Python, C/C++, Java.
- \LaTeX , TikZ/Pgf, Beamer.