



Josué Tonelli-Cueto

Mathematician

Postdoctoral Researcher

0000-0002-2904-1215

Johns Hopkins University

josue.tonelli.cueto@bizkaia.eu

tonellicueto.xyz

illsaidthoughts.xyz

Interests

- * Numerical algorithms and condition-based complexity
- * Computational algebraic geometry
- * Random geometry

Languages

Castellano (Spanish) — [Native]



English



Euskera (Basque)

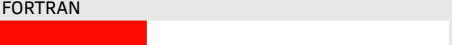
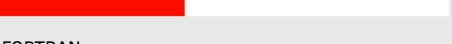
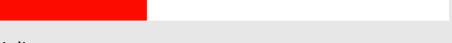
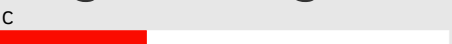


Deutsch (German)



(*)[The scale follows the *Common European Framework of Reference for Languages: Learning, Teaching, Assessment* with the black lines indicating levels A2, B2 and C2 and the gray lines the levels A1, B1 and C1.]

Programming



(*)[The skill scale for each program or programming language is from 0 (Fundamental Awareness) to 6 (Expert).]

Last update on the 2nd of September of 2023.

Profile photo: © Inria / Photo B. Fourier

employment & education

- 2023-2X Rufus Isaacs Postdoctoral Fellow Under the mentorship of Soledad Villar The University of Texas at San Antonio
- 2022-23 Lecturer/Research Fellow Under the mentorship of Alperen A. Ergür The University of Texas at San Antonio
- 2020-22 FSMP Postdoctoral Fellow In the OURAGAN team mentored by F. Roullier and E. Tsigaridas Inria Paris & IMJ-PRG
- 2020 Postdoctoral researcher In the OURAGAN team mentored by F. Roullier and E. Tsigaridas Inria Paris & IMJ-PRG
- 2017-19 Dr. rer. nat. Mathematik (PhD in Mathematics) Under the supervision of Prof. P. Bürgisser and Prof. F. Cucker. BMS & TU Berlin
- 2014-17 M.Sc. Mathematics M.'s t. "On the complexity of some Null-Cone Membership Problems" with Prof. P. Bürgisser. BMS & TU Berlin
- 2009-14 Licenciatura en Matemáticas con Premio Nacional Fin de Carrera UPV/EHU *B. Mathematics* in the University of the Basque Country.

grants & awards

- 2021 MATH+ Dissertation Award 2020 MATH+, BMS & Einstein Foundation Berlin
- 2020 3rd Prize in the Tiburtius Prizes 2020 of the Berlin Universities LKRP Berlin
- 2017-19 BMS Doctoral Fellowship BMS & Einstein Foundation Berlin
- 2014-16 Beca de "la Caixa" para estudios de posgrado en universidades europeas Jointly awarded by Obra Social "la Caixa" and DAAD in 2014 for BMS Phase I.

papers and preprints

- '23 + On the Number of Real Zeros of Random Sparse Polynomial Systems With Alperen A. Ergür and Máté L. Telek. arXiv:2306.06784
- '22 + Generalized Perron Roots and Solvability of the Absolute Value Equation With Manuel Radons. arXiv:1912.08157
- '22 + A p -adic Descartes solver: the Strassman solver arXiv:2203.07016
- '22 + Probabilistic bounds on best rank-one approximation ratio With Khazhgali Kozhasov. arXiv:2201.02191
- 2023 Condition Numbers for the Cube. I: Univariate Polynomials and Hypersurfaces Journal of Symbolic Computation With Elias Tsigaridas. Conference version at ISSAC'20. arXiv:2006.04423
- 2022 Functional norms, condition numbers and numerical algorithms in algebraic geometry Forum Mathematics, Sigma With Felipe Cucker and Alperen A. Ergür. arXiv:2102.11727
- 2022 A Geometric Summation of the Geometric Series The American Mathematical Monthly hal-03779492
- 2022 On the Complexity of the Plantinga-Vegter Algorithm Disc. & Comp. Geometry With F. Cucker and A.A. Ergür. Journal version at ISSAC'19. arXiv:2004.06879
- 2022 Ultrametric Smale's α -theory ACM Communications in Computer Algebra With Jazz G. Suchen. arXiv:2206.08392
- 2022 On the Error of Random Sampling: Uniformly Distributed Random Points on Parametric Curves ISSAC 2022 With A. Chalkis and Ch. Katsamaki. arXiv:2203.02832
- 2022 Beyond Worst-Case Analysis for Root Isolation Algorithms ISSAC 2022 With A.A. Ergür and E. Tsigaridas. arXiv:2202.06428
- 2021 Computing the Homology of Semialgebraic Sets. II: General Formulas J.FoCM With P. Bürgisser and F. Cucker. arXiv:1903.10710
- 2020 Condition numbers for the cube. I: Univariate polynomials and hypersurfaces ISSAC 2020 With E. Tsigaridas. arXiv:2006.04423v1
- 2020 Computing the Homology of Semialgebraic Sets. I: Lax Formulas J.FoCM With P. Bürgisser and F. Cucker. arXiv:1807.06435
- 2019 On the Number of Real Zeros of Random Fewnomials SIAGA With P. Bürgisser and A.A. Ergür. arXiv:1811.09425

selected talks

- 2023 CodEx Seminar (On-line) "Condition Numbers and Probability for Explaining Algorithms"
- 2021 Mathematical Congress of the Americas 2021 University of Buenos Aires (On-line)
 "Symbolic vs. Numerical: Allies or Enemies? (Introductory Talk)"
- 2021 SIAM Conference AAG 2021 Texas A&M (On-line)
 "What's new in Computational Real Algebraic Geometry? (Introductory Talk)"
- 2021 Tutorial-a-thon of the Applied Algebraic Topology Network On-line
 "The Niyogi-Smale-Weinberger Theorem & its relatives"

selected organized activities

- 2023 Minisymposium *Computational Real Algebraic Geometry* SIAM Conf. AAG '23
 With Beatriz Pascual Escudero, Sebastian Debus and Cordian Riener
- 2023 AMS Special Session on JMM2023
Data Science at the Crossroads of Analysis, Geometry, and Topology
 (a Mathematics Research Communities session)
 With Hitesh Gakhar and Harlin Lee
- 2022 Sesión Especial II Encuentro RSME-UMA
Computación y Aplicaciones en Geometría Algebraica
 With Alicia Dickenstein, Gabriela Jerónimo and Beatriz Pascual Escudero
- 2022 Mini-Symposium 5th SIAM TX-LA Meeting
Applications and Computation in Algebraic Geometry
 With Jordy Lopez and Thomas Yahl
- 2022 Sesión Especial RSME2022
Geometría Algebraica: la Aplicada, la Computacional y la Numérica
 With Laura Brustenga i Moncusí and Roser Homs
- 2021 Minisymposium *Computational Real Algebraic Geometry* SIAM Conf. AAG '21
 With Cordian Riener
- 2021 S. Session *Symbolic and Numerical Computation with Polynomials* MCA2021
 With Diego Armentano, Matías Bender and Alperen A. Ergür
- 2020 3rd BYMAT Conference UV & UPV
 Member of the Scientific Committee and of the Poster Committee
- 2016-19 "What is...?" Seminar BMS
 Member of the Organizing Committee
- 2019 Minisymposium *Numerical methods for structured polynomial system solving* SIAM Conference AAG 2019
 With Alperen A. Ergür, Pierre Lairez and Gregorio Malajovich
- 2018 6th BMS Student Conference (21-23/2) BMS
 With BMS Student Representatives of 2017

popularization of mathematics

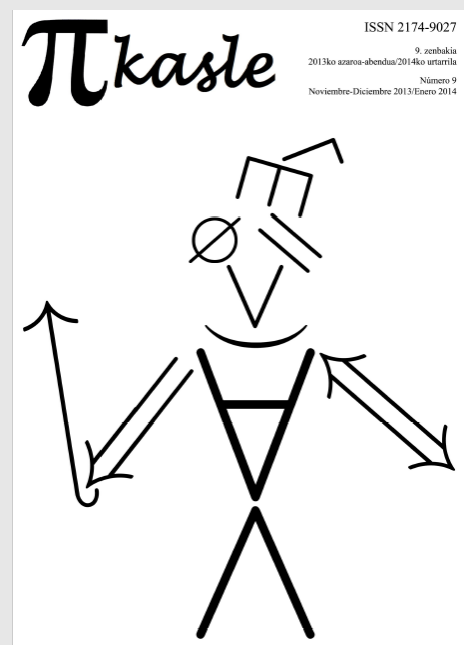
- 2022 *Fête de la Science 2022* [French & Spanish] Colegio de España en París
 Science week open to the general public. Co-organizer representing SIEF.
- 2022 Radio Interview *Sistemas de ecuaciones, ¿cómo resolverlas?* [Spanish]
 At *Investigadores por el mundo* (number 157) by Antonio G. Armas.
- 2015 *Emmy Noether, retrato alfabético* [Spanish] Poem
 Published in the blog "mujeres con ciencia" on the 5th of October.
- 2011-14 π kasle [PIkasle] UPV/EHU Math Students' Magazine
 Mainly online (with ISSN 2174-9027), but with some issues also on paper.
 Founder (together with Ricardo Grande), editor, desktop publisher, cover designer
 (except in issue number 10), interviewer and sporadic author.
 2013 Honor mention in *Ciencia en Acción XIV*
 2012 One 1st Prize in the *Image Difussion Student Awards of the UPV/EHU*

service

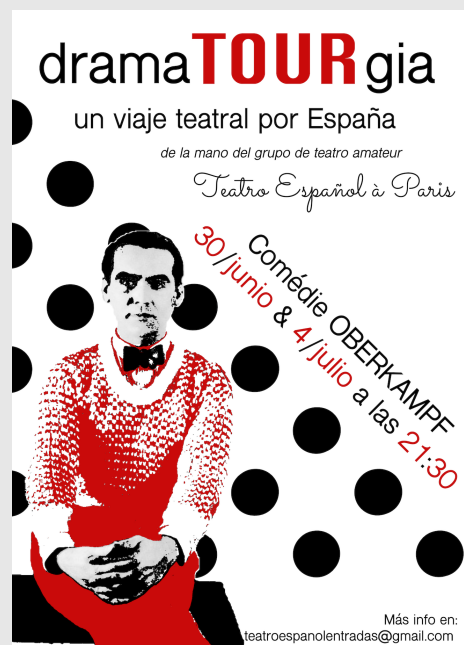
- 2015-18 Vocal del Comité de Evaluación de Titulaciones de Ciencias de UNIBASQ
 Student evaluator at Agency for Quality of the Basque University System



π kasle No. 7



π kasle No. 9



dramaTOURgia: un viaje teatral a través de España