Josué Tonelli-Cueto

Mathematician
Postdoc at Inria Paris

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Interests

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

Languages

Castellano (Spanish) — *[Native]*

English

Euskera (Basque)

Deutsch (German)

Française (French)

(*)[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

C

FORTRAN

MatLab

julia

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

Last update on the 6th of September of 2022.
Profile photo: © Inria / Photo B. Fourrier

employment & education

2022-23 Postdoctoral Fellow — UT San Antonio
Under the mentoship of Alperen A. Ergür

2020-22 FSMP Postdoctoral Fellow — Inria Paris & IMJ-PRG
In the OURAGAN team with F. Roullier and E. Tsigaridas

2020 Postdoctoral researcher — Inria Paris & IMJ-PRG
In the OURAGAN team with F. Roullier and E. Tsigaridas

2017-19 Dr. rer. nat. Mathematik (PhD in Mathematics) — BMS & TU Berlin
Under the supervision of Prof. P. Bürgisser and Prof. F. Cucker.

2014-17 M.Sc. Mathematics — BMS & TU Berlin
M.'s t. "On the complexity of some Null-Cone Memebership Problems" with Prof. P. Bürgisser.

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

2020-22 FSMP Postdoctoral Fellowship — Fondation Sciences Mathématiques de Paris
Call of 2020 in the "interactions" program

2017-19 BMS Doctoral Fellowship — BMS & Einstein Foundation Berlin

2019 Special Award to Young Researchers presenting Posters — MEGA 2019
One out of three given awards

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

'22 + Generalized Perron Roots and Solvability of the Absolute Value Equation — arXiv:1912.08157
With Manuel Radons.

'22 + Ultrametric Smale's α-theory — arXiv:2206.08392
With Jazz G. Suchen.

'22 + A p-adic Descartes solver: the Strassman solver — arXiv:2203.07016

'22 + Probabilistic bounds on best rank-one approximation ratio — arXiv:2201.02191
With Khazhgali Kozhasov.

'21 + Functional norms, condition numbers and numerical algorithms in algebraic geometry — arXiv:2102.11727
With Felipe Cucker and Alperen A. Ergür.

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 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

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

2021 Computing the Homology of Semialgebraic Sets. II: General Formulas — J.FoCM
With P. Bürgisser and F. Cucker. arXiv:1903.10710

2019 On the Number of Real Zeros of Random Fewnomials — SIAGA
With P. Bürgisser and A.A. Ergür. arXiv:1811.09425

2020 Computing the Homology of Semialgebraic Sets. I: Lax Formulas — J.FoCM
With P. Bürgisser and F. Cucker. arXiv:1807.06435

selected talks

2022 MINDS & CIS Seminar Series — John Hopkins University
"Condition Numbers and Probability for Explaining Algorithms in Computational Geometry"

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 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 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.

2015 *Emmy Noether, retrato alfabético* [Spanish] — Poem
Published in the blog "mujeres con ciencia" on the 5th of October.

2011-14 πkasle [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

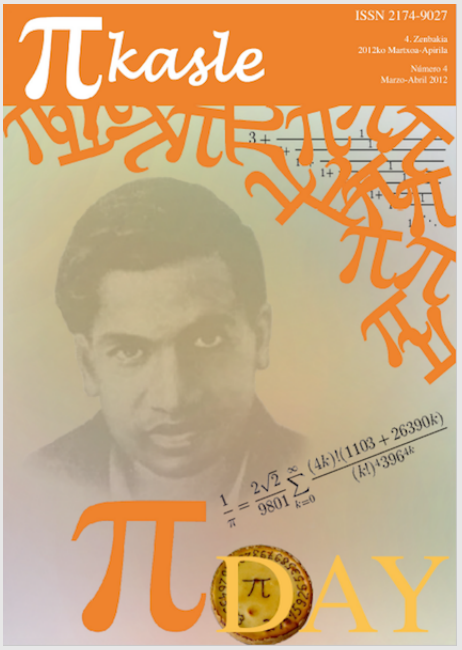
2015-18 Vocal del Comité de Evaluación de Titulaciones de Ciencias de UNIBASQ
Student evaluator of science degrees
at Agency for Quality of the Basque University System (UNIBASQ)

2017 Student Representative of the BMS — Berlin Mathematical School
Representation of students at BMS Executive Board and *Mentoring, Gender and Diversity* Committee and organization of students' social events

references

Peter Bürgisser — Technische Universität Berlin
Felipe Cucker — CityU Hong Kong
Alperen Ali Ergür — UT San Antonio
Elias Tsigaridas — Inria Paris & IMJ-PRG

Some designs



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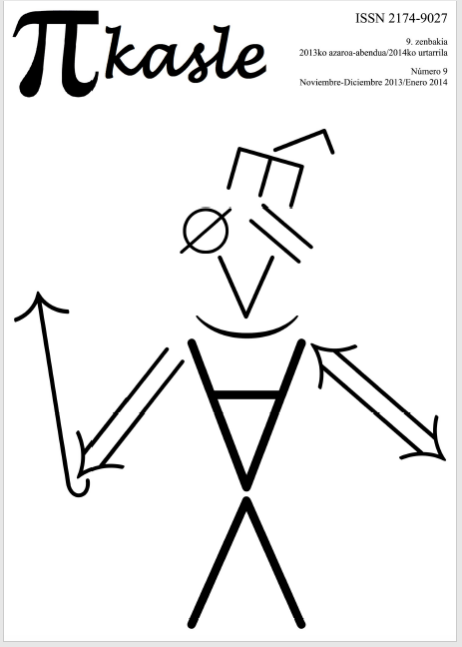

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