

CURRICULUM VITAE

of
Josué TONELLI-CUETO

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CONTACT INFORMATION

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AREAS OF MATHEMATICAL INTEREST

Numerical algorithms Condition-based complexity
Computational algebraic geometry Random geometry

POSITIONS

FSMP Postdoctoral Fellow

Institution: OURAGAN team at Inria Paris and IMJ-PRG
Fondation Sciences Mathématiques de Paris (FSMP)

Mentors: Fabrice Rouillier
Elias Tsigaridas

Location: Paris, France

Duration: 10/2020-09/2022

Postdoctoral researcher

Institution: OURAGAN team at Inria Paris and IMJ-PRG

Mentors: Fabrice Rouillier
Elias Tsigaridas

Location: Paris, France

Duration: 02/2020-09/2020

EDUCATION

Dr. rer. nat. Mathematik

(*PhD in Mathematics in the framework of the Berlin Mathematical School*)

Doctoral thesis' title: *Condition and Homology in Semialgebraic Geometry*

Doctoral Supervisors: Peter Bürgisser
Felipe Cucker

Grade: mit Auszeichnung bestanden (summa cum laude)

(Obtained only when both the thesis and presentation are given the highest grade)

Recognitions: 3rd Prize in the Tiburtius Prizes of the Berlin Universities
MATH+ Dissertation Award 2020

Institution: Berlin Mathematical School (BMS)
Technische Universität Berlin

Duration: 01/2017-11/2019

M.Sc. Mathematik

(*M.Sc. Mathematics in the framework of the Berlin Mathematical School*)

Master's thesis' title: *On the Complexity of some Null-Cone Membership Problems*

Master's thesis' supervisor: Peter Bürgisser

Average grade: 1.0 (In the German system, 1.0 is the highest grade)

Institution: Technische Universität Berlin
Berlin Mathematical School (BMS)

Duration: 10/2014-03/2017

Licenciatura en Matemáticas con Primer Premio Nacional Fin de Carrera

(B. Mathematics with First Prize in the End of Studies National Awards)

Average grade: 9.86/10 (In the Spanish system, 10 is the highest grade)

Recognitions: Best Student Record

Extraordinary End of Degree Award

First Prize in the End of Studies Spanish National Awards

Institution: University of the Basque Country (UPV/EHU)

Duration: 10/2009-07/2014

GRANTS AND AWARDS

Research Scholarships

FSMP Postdoctoral Fellowship

Hosting institution: OURAGAN team at Inria Paris and IMJ-PRG

Awarding Institution: Fondation Sciences Mathématiques de Paris (FSMP)

Duration: 01/10/2020-30/09/2022

BMS Doctoral Fellowship funded by the **Einstein Foundation Berlin**

Framework: Prof. Felipe Cucker's Einstein Visiting Fellowship

Complexity and accuracy of numerical algorithms in algebra and geometry

Awarding institution: Berlin Mathematical School (BMS)

Tecnische Universität Berlin

Funding Entity: Einstein Foundation Berlin

Duration: 01/01/2017-31/12/2019

Beca de "la Caixa" para estudios de posgrado en universidades europeas. Convocatoria 2014

(Scholarship of "la Caixa" for graduate studies in Europe. 2014 Call)

Purpose: Completion of the BMS Phase I

Awarding institution: "la Caixa" Foundation

Funding institution: "la Caixa" Foundation

German Academic Exchange Service (DAAD)

Duration: 01/10/2014-31/07/2016

Beca de Colaboración, para el curso 2013-2014

(Collaboration Scholarship for the academic year 2013-2014)

Purpose: Introduction to research with a researcher of the Basque University System

Topic: Pro- p groups and p -adic analytic groups

Mentor: Gustavo Adolfo Fernández Alcober

Hosting institution: University of the Basque Country (UPV/EHU)

Awarding institution: Gobierno Vasco (Basque Government)

Duration: 01/11/2013-30/06/2014

Beca de Introducción a la Investigación del Programa JAE

(Research Introduction Scholarship of the JAE Program)

Purpose: Introduction to research with a researcher of CSIC

Topic: Class Field Theory

Mentor: Andrei Jaikin-Zapirain

Hosting institution: Instituto de Ciencias Matemáticas (ICMAT)

Awarding institution: Consejo Superior de Investigaciones Científicas (CSIC)

Duration: 01/07/2013-30/09/2013

MATH+ Dissertation Award 2020

Reason: Doctoral thesis

Awarding Institution: Berlin Mathematics Research Center MATH+
Berlin Mathematical School (BMS)
Einstein Foundation Berlin

Date: 12/2021

3. Preis im Tiburtius Preis 2020 – Preis der Berliner Hochschulen

(3rd Prize in the Tiburtius Prizes 2020 of the Berlin Universities)

Reason: Doctoral thesis

Awarding Institution: State Conference of Rectors and Presidents of Berlin Universities (LKRP)

Date: 10/2020

SIAM Student Travel Award

Description: To attend the SIAM Conference on Applied Algebraic Geometry 2019

Awarding Institution: SIAM

Date: 07/2019

Special Award to Young Researchers presenting Posters at MEGA2019

Description: Three special awards were given to young researchers presenting posters

Awarding Conference: MEGA 2019: Effective Methods in Algebraic Geometry

Date: 06/2019

Primer Premio en los Premios Nacionales Fin de Carrera

(First Prize in the End of Studies National Awards)

Reason: Academic achievements during the Licenciatura en Matemáticas

Awarding Institution: Spanish Government

Date: 07/2018

Premio Extraordinario Fin de Carrera de la Licenciatura en Matemáticas

(End of Degree Extraordinary Award of the Licenciatura en Matemáticas)

Reason: Academic achievements during the Licenciatura en Matemáticas

Awarding Institution: Faculty of Science and Technology (ZTF-FCT)
of the University of the Basque Country (UPV/EHU)

Date: 06/2015

Mención de Honor en la modalidad “Trabajos de Divulgación Científica. Medios de Comunicación” de la XIV Edición de Ciencia en Acción

(Honor Mention in the modality “Popular Science work. Media”
of the 14th Edition of Ciencia en Acción)

Co-awardee: Ricardo Grande

Reason: Editing the Mathematics Students’ Magazine Pikasle

Awarding Institution: Consejo Superior de Investigaciones Científicas (CSIC)
Instituto de Ciencias Matemáticas (ICMAT)
Real Sociedad Española de Física (RSEF)
Sociedad Geológica de España
Universidad Nacional de Educación a Distancia (UNED)

Date: 06/10/2013

III Premios al alumnado que mejor ha difundido la imagen de la UPV/EHU

(III Awards to students who best spread the image of the UPV/EHU)

Won award: **1st prize in the category of science**

due to editing the magazine Pikasle
together with Ricardo Grande.

1st prize in the category of social sciences and legal studies

due to winning the IV University Debate League of the G9 Group
together with fellow teammates.

Awarding Institution: University of the Basque Country (UPV/EHU)

Date: 29/11/2012

Winner in the IV Liga de Debate Universitario Grupo G9

(IV University Debate League of the G9 Group)

Description: Competition of debate between several universities in the G9 University Group

Team: Ion Baratas

Leire Caballero

Jesús Ángel Ibarreche

Juan Sandín

Josué Tonelli-Cueto

Hosting institution: University of Oviedo

Date: 29/02/2012-02/03/2012

Accésit en el Concurso de trabajos sobre Sofía Kovalevskaya

(Special Mention in the contest of works about Sophia Kovalevskaya)

Awarding Institution: University of the Basque Country (UPV/EHU)

Date: 24/06/2011

PUBLICATIONS

Preprints

- F. Cucker, A. A. Ergür, & J. Tonelli-Cueto. (2021, February). Functional norms, condition numbers and numerical algorithms in algebraic geometry. arXiv:2102.11727.
- F. Cucker, A. A. Ergür, & J. Tonelli-Cueto. (2020, April). On the Complexity of the Plantinga-Vegter Algorithm. Journal version of (Cucker, Ergür, & Tonelli-Cueto, 2019). arXiv:2004.06879.
- J. Tonelli-Cueto & E. Tsigaridas. (2020b, December). Condition Numbers for the Cube. I: Univariate Polynomials and Hypersurfaces. Accepted to the Special Issue of ISSAC '20 of the Journal of Symbolic Computation. Journal version of (Tonelli-Cueto & Tsigaridas, 2020a). arXiv:2006.04423.

Journal papers

- P. Bürgisser, F. Cucker, & J. Tonelli-Cueto. (2021, October). Computing the Homology of Semialgebraic Sets. II: General formulas. *Foundations of Computational Mathematics*, 21(5), 1279–1316. On-line from January of 2021. doi:10.1007/s10208-020-09483-8. arXiv:1903.10710.
- P. Bürgisser, F. Cucker, & J. Tonelli-Cueto. (2020, February). Computing the Homology of Semialgebraic Sets. I: Lax Formulas. *Foundations of Computational Mathematics*, 20(1), 71–118. On-line from May of 2019. doi:10.1007/s10208-019-09418-y. arXiv:1807.06435.
- P. Bürgisser, A. A. Ergür, & J. Tonelli-Cueto. (2019, December). On the Number of Real Zeros of Random Fewnomials. *SIAM J. Appl. Algebra Geom.* 3(4), 721–732. doi:10.1137/18M1228682. arXiv:1811.09425.

Conference papers

- J. Tonelli-Cueto & E. Tsigaridas. (2020a, July). Condition Numbers for the Cube. I: Univariate Polynomials and Hypersurfaces. In *Proceedings of the 2020 on International Symposium on Symbolic and Algebraic Computation* (pp. 434–441). ISSAC '20. Kalamata, Greece. ACM. doi:10.1145/3373207.3404054. arXiv:2006.04423v1.
- F. Cucker, A. A. Ergür, & J. Tonelli-Cueto. (2019, July). Plantinga-Vegter Algorithm Takes Average Polynomial Time. In *Proceedings of the 2019 on International Symposium on Symbolic and Algebraic Computation* (pp. 114–121). ISSAC '19. Beijing, China. ACM. doi:10.1145/3326229.3326252. arXiv:1901.09234.

Other

- J. Tonelli-Cueto. (2019, December). *Condition and Homology in Semialgebraic Geometry* (Doctoral thesis, Technische Universität Berlin). doi:10.14279/depositonce-9453

TALKS AND OTHER PRESENTATIONS

Conference presentations

Jornada SIEF y Asamblea General 2021 (2021)

Given talk: Reacciones químicas, polinomios y sus ceros reales

Workshop “Real Polynomials: Counting and Stability” (2021) [On-line due to the COVID-19]

Given talk: Metric restrictions on the number of real zeros

SIAM Conference on Applied Algebraic Geometry 2021 (2021) [On-line due to the COVID-19]

Given talk: Breaking the Curse of Infinite Average Run-Time
in Numerical Real Algebraic Geometry, can the Adaptive Grid Method do the Job?

Note: Contributed talk, submitted as poster

SIAM Conference on Applied Algebraic Geometry 2021 (2021) [On-line due to the COVID-19]

Given talk: What's new in Computational Real Algebraic Geometry? (Introductory Talk)

Co-speaker: C. Riener

Mathematical Congress of the Americas 2021 (2021) [On-line due to the COVID-19]

Given talk: What's new in Computational Real Algebraic Geometry? (Introductory Talk)

Co-speaker: M. Bender

MEGA 2021: Effective Methods in Algebraic Geometry (2021) [On-line due to the COVID-19]

Given talk: A numerical algorithm for zero counting. IV: An adaptive speedup

MEGA 2021: Effective Methods in Algebraic Geometry (2021) [On-line due to the COVID-19]

Given talk: Functional norms, condition numbers and numerical algorithms in algebraic geometry

Co-speaker: F. Cucker & A. A. Ergür

Congreso Online Divulga NextGen (1^a edición) (2021) [On-line]

Given talk: Semi...¿qué? Las múltiples formas de lo semialgebraico y cómo determinarlas
Divulgative video about my research in Spanish

ISSAC 2020 (2020) [On-line talk due to the COVID-19 pandemic]

Given talk: Condition Numbers for the Cube. I: Univariate Polynomials and Hypersurfaces

Milestones Conference of the Thematic Einstein Semester on Algebraic Geometry (2020)

Given talk: Beyond Gaussians in the probabilistic analysis of condition numbers in algebraic geometry

V Congreso de Jóvenes Investigadores la RSME (2020)

Given talks: Real zeros of random fewnomials

Computing the homology of semialgebraic sets in weak single exponential time

Research Workshop on Random Real Algebraic Geometry (2019)

Given talk: On zeros of random fewnomials (2 talks)

Opening Conference of the Thematic Einstein Semester on Algebraic Geometry (2019)

Given talk: What is the probabilistic analysis of a condition number?

Complexity of Numerical Computation: A conference in honor of Felipe Cucker (2019)

Given talk: Average minus Weak Complexity equals Adaptive algorithms Sets

ISSAC 2019 (2019)

Given talk: Plantinga-Vegter algorithm takes average polynomial time

SIAM Conference on Applied Algebraic Geometry 2019 (2019)

Given talk: Farewell to Weyl: Condition-based analysis
with a Banach norm in numerical algebraic geometry

Workshop MEGAR 2019: Effective Methods in Real Algebraic Geometry (2019)

Given talk: Numerical Computation of Homology Groups of Closed Semialgebraic Sets

2nd BYMAT Conference (2018)

Given talk: How many zeros does a random fewnomial system have?

7th BMS Student Conference (2019)

Given talk: How many zeros does a random fewnomial system have?

Random Real Algebraic Geometry Workshop (2019)

Given talk: On Zeros of Random Fewnomials (5 talks series)

1st BYMAT Conference (2018)

Given talk: Computing the Homology of Closed Semialgebraic Sets

6th BMS Student Conference (2018)

Given talk: The Niyogi-Smale-Weinberger Approximation Theorem

Workshop “Algebra meets Numerics: Condition and Complexity” (2017)

Given talk: Computing the Homology of General Semialgebraic Sets

Workshop “Reading Group on Real Algebraic Geometry” (2017)

Given talk: Random real Schubert Calculus and lines on surfaces

5th BMS Student Conference (2017)

Given talk: The shadow of the hidden combinatorics of completely positive operators
on Polynomial Identity Testing

Invited seminar talks

Kolloquium des Fachgebiets Algorithmische Algebra der TU Berlin

(Seminar of the Algorithmic Algebra Group of TU Berlin)

Given talk: What does the condition number of a real polynomial system tell us?
Unexpected answers in the real world

Institution: Technische Universität Berlin

Location: Berlin, Germany

Date: 08/12/2021

Applied Algebra and Analysis Online Seminar

Given talk: New condition-based bounds for the number of real zeros

Institution: Technische Universität Braunschweig
Universität Osnabrück

Location: Braunschweig and Osnabrück, Germany [On-line]

Date: 02/12/2021

Algebra Seminar of the UiT The Arctic University of Norway

Given talk: A sequel for a famous trilogy: accelerating the grid method by adaptive grids

Institution: UiT The Arctic University of Norway

Location: Tromsø, Norway

Date: 28/10/2021

Coloquio de Matemática Aplicada del Instituto de Matemática

(Seminar of Applied Mathematics of the Institute of Mathematics)

Given talk: Finding real zeros a lot faster through an adaptive grid,

Institution: Universidade Federal do Rio de Janeiro

Location: Rio de Janeiro, Brasil [On-line]

Date: 09/07/2021

Seminar of the OURAGAN team of Inria Paris

Given talk: A numerical algorithm for zero counting. IV: An adaptive speedup

Institution: Inria Paris and IMJ-PRG

Location: Paris, France [On-line]

Date: 06/05/2021

Kolloquium des Fachgebiets Algorithmische Algebra der TU Berlin

(Seminar of the Algorithmic Algebra Group of TU Berlin)

Given talk: Towards Finite Expectation

in the Numerical Computation of the Homology of Semialgebraic Sets

Institution: Technische Universität Berlin

Location: Berlin, Germany [On-line]

Date: 10/02/2021

Seminar of the OURAGAN team of Inria Paris

Given talk: Condition Numbers for the Cube. I: Univariate Polynomials and Hypersurfaces

Institution: Inria Paris and IMJ-PRG

Location: Paris, France [On-line]

Date: 30/06/2020

Algebra Seminar of the “Groups, Topology and Applications” Research Group of the UPV/EHU

Given talk: Computing the Homology of Semialgebraic Sets in Weak Exponential Time

Institution: University of the Basque Country (UPV/EHU)

Location: Leioa, Spain

Date: 02/05/2019

Colloquium of the Graduiertekolleg “Facets of Complexity” (GRK 2434)

Given talk: Condition meets Computational Geometry: The Plantinga-Vegter algorithm case

Institution: Freie Universität Berlin

Location: Berlin, Germany

Date: 11/04/2019

Oberseminar des Institut für Algebra und Geometrie der OvGU

(Seminar of the Faculty of Algebra and Geometry of the OvGU)

Given talk: Computing the Homology of Semialgebraic Sets

Institution: Otto von Guericke Universität Magdeburg (OvGU)

Location: Magdeburg, Germany

Date: 16/01/2018

Seminario del Departamento de Matemáticas de la UPV/EHU

(Seminar of the Department of Mathematics of the UPV/EHU)

Given talk: Sobre la complejidad de algunos problemas de pertenencia al cono nulo

Institution: University of the Basque Country (UPV/EHU)

Location: Leioa, Spain

Date: 09/01/2017

Posters

Topological Data Analysis Workshop (2021)

Poster: Computing the Homology of Semialgebraic Sets via TDA

MEGA 2019: Effective Methods in Algebraic Geometry (2019)

Poster: Computing the Homology Groups of Closed Semialgebraic Sets in Weak Exponential Time

2nd Graduate Student Meeting on Applied Algebra and Combinatorics (2019)

Poster: Computing the Homology Groups of Semialgebraic Sets

Congreso Biental de la Real Sociedad Matemática Española 2019 (2019)

Poster: Computing the Homology Groups of Semialgebraic Sets in Weak Exponential Time

Summer School on Numerical Computing in Algebraic Geometry (2018)

Poster: Computing the Homology Groups of Semialgebraic Sets

QMath Masterclass on “Tensors: Geometry and Quantum Information” (2018)

Poster: Polynomial Identity Testing and the Combinatorics of Completely Positive Operators

Symposium “Bridging European Science II” (2018)

Poster: Computing the “Shape” of Semialgebraic Sets

Other

Tutorial-a-thon of the Applied Algebraic Topology Network (2021)

Given talk: The Niyogi-Smale-Weinberger Theorem & its relatives

“What is...?” Seminar (2018)

Given talk: What is the best voting system?

“What is...?” Seminar (2018)

Given talk: What are semialgebraic sets in context?

“What is...?” Seminar (2017)

Given talk: What are BPP, RP and the other probabilistic complexity classes?

“What is...?” Seminar (2017)

Given talk: What is the length of a potato?

“What is...?” Seminar (2016)

Given talk: What is an Origami Constructible Number?

ORGANIZED ACTIVITIES

Minisymposium *Computational Real Algebraic Geometry* [Co-organizer]

at **SIAM Conference on Applied Algebraic Geometry 2021**

Organizer: Josué Tonelli-Cueto

Cordian Riener

Location: College Station, Texas, USA (On-line)

Date: 16/08/2021-20/08/2021

Special Session *Symbolic and Numerical Computation with Polynomials* [Co-organizer]

at **Mathematical Congress of the Americas 2021**

Organizer: Diego Armentano

Matías Bender

Alperen A. Ergür

Josué Tonelli-Cueto

Location: Buenos Aires, Argentina (On-line)

Date: 19/07/2021-24/07/2021

3rd BYMAT Conference [Member of the Scientific Committee and of the Poster Committee]

Location: Valencia, Spain (On-line)

Date: 01/12/2020-03/12/2020

“What is...?” Seminar [Co-organizer]

Description: Student organized seminar where
a new concept, idea or object is introduced in each session

Role: Co-organizer, web design and video management

Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 05/2016-12/2019

Research Workshop on Random Real Algebraic Geometry [Co-organizer]

Location: Güzelyurt, Northern Cyprus

Date: 21/10/2019-26/10/2019

**Minisymposium *Numerical methods for structured polynomial system solving* [Co-organizer]
at SIAM Conference on Applied Algebraic Geometry 2019**

Organizer: Alperen A. Ergür

Pierre Lairez

Gregorio Malajovich

Josué Tonelli-Cueto

Location: Bern, Switzerland

Date: 09/07/2019-12/07/2019

6th BMS Student Conference [Co-organizer]

Location: Berlin, Germany

Date: 21/02/2018-23/02/2018

TEACHING EXPERIENCE**3rd year Bachelor Research Project****“Topological Data Analysis in Computational Real Algebraic Geometry”**

Role: Supervisor (together with Elias Tsigaridas)

Supervised Student: Aurèle Bohbot

Institution: École polytechnique

Date: 10/2021-12/2021

Effective Algebraic Geometry Seminar

Role: Organizer (together with Peter Bürgisser and Alperen Ali Ergür)

Teaching load: 12 hours

Organizing group: Fachgebiet Algorithmische Algebra

Institution: Technische Universität Berlin

Date: 18/04/2018-19/07/2018

Private Remedial Teacher

Description: Private lessons to groups of undergraduate students

Courses: 1st year Linear Algebra for mathematicians

2nd year Linear Algebra for mathematicians

1st year Mathematics for non-mathematicians

Teaching load: Approx. 156 hours

Institution: Centro de Estudios INTEC

Date: 10/2013-05/2014

“Group of units in complete discrete valuation rings” Course

Role: Lecturer

Teaching load: 4 hours

Organizing group: GRECA Research Group

Institution: Faculty of Science and Technology (ZTF-FCT)
of the University of the Basque Country (UPV/EHU)

Date: 11/02/2014-14/02/2014

“P vs. NP and related topics” Seminar

Description: Seminar covering some concepts in complexity theory

Role: Co-organizer (together with Luis Martínez) and main lecturer

Teaching load: 30 hours

Organizing entity: Asociación de Estudiantes de Matemáticas Epsilon-Delta Matematika Ikasleen Elkartea

Institution: Faculty of Science and Technology (ZTF-FCT)
of the University of the Basque Country (UPV/EHU)

Date: 11/2012-05/2013

Projects and organized activities

Revista π kasle Aldizkaria

(Mathematics Students' Magazine π kasle)

ISSN: 2174-9027 (digital edition)
2255-5714 (printed edition)

Founders: Ricardo Grande
Josué Tonelli-Cueto

Role: Member of the Editorial Committee
Cover designer and desktop publisher (from the 1st to the 9th issue)
Social media manager

Recognitions: First prize in the
III Premios al alumnado que mejor ha difundido la imagen de la UPV/EHU
Honor Mention in the 14th Edition of *Ciencia en Acción*

Hosting Institution: Faculty of Science and Technology (ZTF-FCT)
of the University of the Basque Country (UPV/EHU)

Date: 09/2011-07/2014

π kasle's Mathematics, Magic and Mystery Workshop

Description: Workshop covering topics related to magic and mathematics

Organizing entity: Revista π kasle Aldizkaria

Organizer: Ricardo Grande Izquierdo
Josué Tonelli-Cueto

Speakers: Pedro Alegría Ezquerro
Juan Carlos Ruiz de Arcaute

Hosting Institution: Faculty of Science and Technology (ZTF-FCT)
of the University of the Basque Country (UPV/EHU)

Location: Leioa, Spain

Dates: 09/05/2014 and 30/05/2014

π kasle's Martin Gardner Celebration of Mind

Description: Day of activities in commemoration of Martin Gardner

Organizing entity: Revista π kasle Aldizkaria

Organizer: Josué Tonelli-Cueto

Hosting Institution: Faculty of Science and Technology (ZTF-FCT)
of the University of the Basque Country (UPV/EHU)

Location: Leioa, Spain

Dates: 23/10/2013

Articles

J. Tonelli-Cueto. (2021, May). Semi...¿qué? Las múltiples formas de lo semialgebraico y cómo determinarlas [Spanish] (Semi... what? The multiple shapes of the semialgebraic and how to determine them). In *Libro de Resúmenes de Divulga NextGen I* (26, 27 y 28 de mayo de 2021) (pp. 42–43). Zenodo. doi:10.5281/zenodo.4718329

J. Tonelli-Cueto. (2015, October). Emmy Noether, un retrato alfabético [Spanish] (Emmy Noether, an alphabetic portrait). *Blog "mujeres con ciencia"*. 2015-10-05.

Tour Guide at the Astronomia Emakume/Con 'A' de Astrónomas Exhibition

Description: Exhibition about female astronomers and astronomy

Curator: Eulalia Pérez Sedeño

Josefina Ling

Organizer: Marta Macho

Raúl Ibañez

Pedro Alegría

Hosting institution: University of the Basque Country (UPV/EHU)

Location: Bilbao, Spain

Dates: 06/10/2011-11/11/2011

Web page: www.ehu.es/astronomasbilbao/

Tour Guide at the RSME-IMAGINARY BILBAO Exhibition

Description: Spanish tour of the exhibition *IMAGINARY* about algebraic surfaces

Organizing entity: Real Sociedad Matemática Española (RSME)

Organizer: Marta Macho

Raúl Ibañez

Pedro Alegría

Hosting institution: University of the Basque Country (UPV/EHU)

Location: Bilbao, Spain

Dates: 05/05/2011-26/05/2011

Web page: www.ehu.es/imaginary/

SERVICE

Referee/Reviewer (*Current and past reviews in alphabetical order*)

Journal: Journal of Complexity

Mathematics of Computation

Forum of Mathematics, Sigma

Foundations of Computational Mathematics

Conference: ISSAC 2020

MEGA2019

Other: MathSciNet

Vocal Estudiante del Comité de Evaluación de Titulaciones de UNIBASQ en el Area de Ciencias

(Student Vocal of the Committee of Evaluation of Degrees of UNIBASQ in the Area of Science)

Description: Elaboration of evaluation reports of science degrees
taught in the Basque University System

Institution: Agency for Quality of the Basque University System (UNIBASQ)

Date: 04/2015-03/2018

BMS Student Representative

Institution: Berlin Mathematical School (BMS)

Dates: 01/2017-12/2017

Asociación de Estudiantes de Matemáticas Epsilon-Delta Matematika Ikasleen Elkartea

(An association of mathematics students in the University of the Basque Country)

Labour: Secretary

Dates: 09/2012-05/2013

Research Stays

Research Visit to Cordian Riener in Norway

Goal: Discussion for future projects
 Institution: UiT The Arctic University of Norway
 Location: Tromsø, Norway
 Dates: 25/10/2021-02/11/2021

Research Visit to Elias Tsigaridas in France

Goal: Discussion for future projects
 Institution: IMJ-PRG
 Location: Paris, France
 Dates: 19/01/2020-25/01/2020

Research Visit to Elias Tsigaridas in France

Goal: Discussion for future projects
 Institution: IMJ-PRG
 Location: Paris, France
 Dates: 8/12/2019-12/12/2019

Research Visit to Elias Tsigaridas in France

Goal: Discussion for future projects
 Institution: LIP6 (Laboratoire d'Informatique de Paris 6)
 Location: Paris, France
 Dates: 12/05/2019-17/05/2019

Research Stay with Felipe Cucker in Hong Kong

Goal: Working with one of the PhD advisors
 Institution: CityU Hong Kong
 Location: Hong Kong, China
 Dates: 15/03/2019-01/04/2019

Research Visit to Nicolai Vorobjov in England

Goal: Discussion of a theorem of Gabrielov and Vorobjov related to the PhD work
 Institution: University of Bath
 Location: Bath, England
 Dates: 27/10/2018-03/11/2018

Research Stay with Felipe Cucker in France

Goal: Working with one of the PhD advisors
 Location: Tuleries d'Affiac, France
 Dates: 01/10/2018-15/10/2018

Research Stay with Felipe Cucker in Hong Kong

Goal: Working with one of the PhD advisors
 Institution: CityU Hong Kong
 Location: Hong Kong, China
 Dates: 10/04/2018-28/04/2018

Research Stay with Felipe Cucker in Hong Kong

Goal: Working with one of the PhD advisors
 Institution: CityU Hong Kong
 Location: Hong Kong, China
 Dates: 21/11/2017-08/12/2017

Research Stay with Felipe Cucker in Hong Kong

Goal: Working with one of the PhD advisors
Institution: CityU Hong Kong
Location: Hong Kong, China
Dates: 13/01/2017-26/01/2017

Attended conferences

Workshop “Real Polynomials: Counting and Stability”

Organizer: Frédéric Bihan
Timo de Wolff
Alicia Dickenstein
Thorsten Theobald

Hosting Institution: Banff International Research Station for Mathematical Innovation and Discovery
Location: Casa Matemática Oaxaca, Oaxaca, Mexico (On-line)
Date: 18-22/10/2021

SIAM Conference on Applied Algebraic Geometry 2021

Organizer: Hal Schenck and Josephine Yu (Conference Co-Chairs)
Hosting Institution: Texas A&M University
Location: College Station, Texas, USA (On-line)
Date: 16/08/2021-20/08/2021

Mathematical Congress of the Americas 2021

Organizer: Mathematical Council of the Americas (MCofA)
Hosting Institution: Universidad de Buenos Aires
Location: Buenos Aires, Argentina (On-line)
Date: 07/06/2021-11/06/2021

MEGA 2021: Effective Methods in Algebraic Geometry

Organizer: Carlos DAndrea (Chair)
Timo de Wolff
Elisa Gorla
Gabriela Jeronimo
Kaie Kubjas
Anton Leykin
Fateme Mohammadi
Cordian Riener
Hosting Institution: UiT The Arctic University of Norway
Location: Tromsø, Norway (On-line)
Date: 17/06/2021-21/06/2021

Congreso Online Divulga NextGen (1^a edición)

(Online Conference Divulga NextGen (1st edition))

Organizer: Lucía Olmo García
Enrique Javier Carrasco Correa
Gloria Domínguez Rodríguez
Elena Sánchez López
Rafael Carlos Estévez Toledano
Beatriz María Fresco Cala
Location: On-line
Date: 26/05/2021-28/05/2021

Topological Data Analysis Workshop

Organizer: Brittany Fasy
Kathryn Hess
Matthew Kahle
Sayan Mukherjee
Jose Perea

Hosting Institution: Institute for Mathematical and Statistical Innovation

Location: Chicago, Illinois, USA (On-line)

Date: 26/04/2021-30/04/2021

3rd BYMAT Conference

Organizer: Ana Navarro Quiles
Eva Primo Tárraga
Clara Burgos Simón
David Martínez Rodríguez
Elena López Navarro
Alberto Espuny Díaz
Miguel Reula Martín
José Alberto Conejero Casares
Patricio Almirón Cuadros

Hosting Institution: Universitat de València
Universitat Politècnica de València

Location: Valencia, Spain (On-line)

Date: 01/12/2020-03/12/2020

CO@Work 2020

Organizer: Timo Berthold
Thorsten Koch

Hosting Institution: Technische Universität Berlin
Zuse Institut Berlin

Location: Berlin, Germany (On-line)

Date: 14/09/2020-25/09/2020

45th International Symposium on Symbolic and Algebraic Computations (ISSAC 2020)

Organizer: Ioannis Z. Emiris and Lihong Zhi (General Chairs)

Location: Kalamatas, Greece (On-line)

Date: 20/07/2020-23/07/2020

Milestones Conference of the Thematic Einstein Semester on Algebraic Geometry

Organizer: Matías Bender
Peter Bürgisser

Hosting Institution: Zuse Institut Berlin

Location: Berlin, Germany

Date: 27/02/2020-28/02/2020

V Congreso de Jóvenes Investigadores la RSME

(V Conference of Young Researchers of the RSME)

Organizer: Real Sociedad Matemática Española (RSME)

Hosting Institution: Universitat Jaume I

Location: Berlin, Spain

Date: 27/01/2020-31/01/2020

Research Workshop on Random Real Algebraic Geometry

Organizer: Alp Bassa
Turgay Bayraktar
Özgür Kiisel
Ferit Öztürk
Josué Tonelli-Cueto

Hosting Institution: Middle East Technical University - Northern Cyprus Campus

Location: Güzelyurt, Northern Cyprus

Date: 21/10/2019-26/10/2019

Opening Conference of the Thematic Einstein Semester on Algebraic Geometry

Organizer: Mario Kummer
Angela Ortega
Andrea Petracchi
Karin Schaller

Hosting Institution: Freie Universität Berlin

Location: Berlin, Germany

Date: 07/10/2019-11/10/2019

Complexity of Numerical Computation: A conference in honor of Felipe Cucker

Organizer: Peter Bürgisser
Teresa Krick
Javier Peña
Stephen Smale

Hosting Institution: Berlin-Brandenburgische Akademie der Wissenschaften

Location: Berlin, Germany

Date: 03/06/2019-05/06/2019

44th International Symposium on Symbolic and Algebraic Computations (ISSAC 2019)

Organizer: James Davenport and Dongming Wang (General Chairs)

Hosting Institution: Beihang University

Location: Beijing, China

Date: 15/07/2019-18/07/2019

SIAM Conference on Applied Algebraic Geometry 2019

Organizer: Sandra Di Rocco and Caroline Uhler (Conference Co-Chairs)

Hosting Institution: Universität Bern

Location: Bern, Switzerland

Date: 09/07/2019-13/07/2019

Workshop MEGAR 2019: Effective Methods in Real Algebraic Geometry

Organizer: Mariemi Alonso
Carlos Andradas
Antonio Díaz-Cano
M. Jesús de la Puente
M. Pilar Vélez
M. Ángeles Zurro

Hosting Institution: Universidad Complutense de Madrid

Location: Madrid, Spain

Date: 21/06/2019-22/06/2019

MEGA 2019: Effective Methods in Algebraic Geometry

Organizer: Theobald Thorstein (Chair)
Mariemi Alonso (Local Chair)
Carlos D'Andrea
Alessandra bernardi
Frederic Bihan
Sandra Di Rocco
Mauricio Velasco
Josephine Yu

Hosting Institution: Universidad Complutense de Madrid

Location: Madrid, Spain

Date: 17/06/2019-21/06/2019

Noether Konferenz 2019: Wie kommt das Neue in die Welt?

(Noether Conference 2019: How does the New come in the World?)

Organizer: Berlin Mathematics Research Center MATH+
Zentrale Frauenbeauftragte der Freien Universität Berlin
Max-Planck-Institut für Wissenschaftesgeschichte

Location: Berlin, Germany

Date: 03/06/2019-05/06/2019

2nd BYMAT Conference

Organizer: Alberto Redondo Hernández
Ángela Capel
Blanca Fernández Besoy
Jesús Ocáriz
Makrina Agaoglou
Patricia Conteras-Tejada
Roi Naveiro
Teresa Luque

Hosting Institution: Instituto de Ciencias Matemáticas (ICMAT)

Location: Madrid, Spain

Date: 20/05/2019-24/05/2019

7th BMS Student Conference

Organizer: Simona Boyadzhyska
Candan Güdücü
Michael Rothgang
Massimo Secci
Nicola Vassena

Hosting Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 20/02/2019-22/02/2019

2nd Graduate Student Meeting on Applied Algebra and Combinatorics

Organizer: Tim Seynnaeve
Rodica Dinu
Giulia Codenotti
Frank Röttger

Hosting Institution: Max-Planck-Institut für Mathematik in der Naturwissenschaften

Location: Leipzig, Germany

Date: 18/02/2019-20/02/2019

Congreso Bienal de la Real Sociedad Matemática Española 2019

(Biennial Congress of the Spanish Royal Mathematical Society)

Organizer: Real Sociedad Matemática Española (RSME)

Hosting Institution: Universidad de Cantabria (UC)

Location: Santander, Spain

Date: 04/02/2019-08/02/2019

Random Real Algebraic Geometry Workshop

Organizer: Ali Ula Özgür Kiisel

Hosting Institution: Nesin Matematik Köyü (Nesin Mathematical Village)

Location: Nesin Matematik Köyü, Turkey

Date: 21/01/2019-27/01/2019

6th Heidelberg Laureate Forum

Organizer: Heidelberg Laureate Forum Foundation (HLFF)

Hosting Institution: Heidelberg University

Location: Heidelberg, Germany

Date: 23/09/2018-28/09/2018

Summer School on Numerical Computing in Algebraic Geometry

Organizer: Mario Kummer

Paul Breiding

Yue Ren

Emre Sertöz

Hosting Institution: Max-Planck-Institut für Mathematik in der Naturwissenschaften

Location: Leipzig, Germany

Date: 13/08/2018-17/08/2018

QMath Masterclass on “Tensors: Geometry and Quantum Information”

Organizer: Centre for the Mathematics of Quantum Theory (QMATH)

Niels Bohr International Academy (NBIA)

Hosting Institution: University of Copenhagen

Location: Copenhagen, Denmark

Date: 18/06/2018-22/06/2018

Workshop “Optimization, Complexity and Invariant Theory”

Organizer: Avi Wigderson

Hosting Institution: Institute for Advance Studies (IAS)

Location: Princeton, USA

Date: 04/06/2018-08/06/2018

Symposium “Bridging European Science II”

Organizer: Sociedad de Científicos Españoles en la República Federal de Alemania (CERFA)

Comunidad de Científicos Españoles en Dinamarca (CED)

Asociación de Científicos Españoles en Suecia (CED)

Hosting Institution: Spanish Embassy in Berlin

Location: Berlin, Germany

Date: 02/06/2018

1st BYMAT Conference

Organizer: David Alfaya

Ángela Capel

Patricia Conteras-Tejada

Roi Naveiro

Jesús Ocáriz

Hosting Institution: Instituto de Ciencias Matemáticas (ICMAT)

Location: Madrid, Spain

Date: 07/05/2018-09/05/2018

6th BMS Student Conference

Organizer: Héctor Andrade Loarca
Qiao Luo
Brent Moran
Yuya Tokuta
Josué Tonelli-Cueto

Hosting Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 21/02/2018-23/02/2018

Workshop “Algebra meets Numerics: Condition and Complexity”

Organizer: Peter Bürgisser
Felipe Cucker

Hosting Institution: Technische Universität Berlin

Location: Berlin, Germany

Date: 06/11/2017-07/11/2017

FoCM 2017 Conference (Blocks B and C)

Organizer: FoCM Society

Hosting Institution: Universitat de Barcelona

Location: Barcelona, Spain

Date: 13/07/2017-19/07/2017

Workshop “Reading Group on Real Algebraic Geometry”

Organizer: Kristin Shaw
Rainer Sinn
Mario Kummer

Hosting Institution: Max-Planck-Institut für Mathematik in der Naturwissenschaften

Location: Leipzig, Germany

Date: 03/07/2017-07/07/2017

Workshop “Polynomials and Polytopes”

Organizer: Bernd Sturmfels
Timo de Wolff

Hosting Institution: Technische Universität Berlin

Location: Berlin, Germany

Date: 10/06/2017

Chow Lectures 2017

Organizer: Karim Adiprasito
Christian Lehn
Mateusz Michalek
Matthias Schwarz

Hosting Institution: Max-Planck-Institut für Mathematik in der Naturwissenschaften

Location: Leipzig, Germany

Date: 22/05/2017-24/05/2017

BCAM Course “Quantum Information Theory”

Organizer: Anna Vershynina

Hosting Institution: Basque Center for Applied Mathematics (BCAM)

Location: Bilbao, Spain

Date: 13/03/2017-17/03/2017

5th BMS Student Conference

Organizer: Qianheng Chen
Jan Hackfeld
Lauri Loiskekoski
Alexandra Munteanu
András Tóbiás

Hosting Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 22/02/2017-24/02/2017

Workshop “Tensors: Algebra meets Numerics”

Organizer: Wolfgang Hackbusch
Bernd Sturmfels
André Uschmajew

Hosting Institution: Max-Planck-Institut für Mathematik in der Naturwissenschaften

Location: Leipzig, Germany

Date: 12/12/2016-14/12/2016

7th European Congress of Mathematics

Organizer: Deutsche Mathematiker-Vereinigung (DMV)
Gesellschaft für Angewandte Mathematik und Mechanik (GAMM)
MATHEON
ECMath
Berlin Mathematical School (BMS)

Hosting Institution: Technische Universität Berlin

Location: Berlin, Germany

Date: 18/07/2016-22/07/2016

4th BMS Student Conference

Organizer: Daniele Agostini
Mark Curran
Efstathia Katsigianni
Eva Martínez Romero
Nevena Pali

Hosting Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 17/02/2016-19/02/2016

Hilbert Bernays Summer School on Logic and Computation

Organizer: Georg-August-Universität Göttingen

Hosting Institution: Georg-August-Universität Göttingen

Location: Göttingen, Germany

Date: 26/07/2015-01/08/2015

2015 Santaló Summer School on “Number theory and arithmetic geometry”

Organizer: RSME (Real Sociedad Matemática Española)
Universidad Internacional Menéndez Pelayo (UIMP)

Hosting Institution: UIMP

Location: Santander, Spain

Date: 13/07/2015-17/07/2015

BMS Summer School 2015 on “Convex geometry – discrete and computational”

Organizer: Martin Henk
Raman Sanyal

Hosting Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 29/06/2015-10/07/2015

Homological Algebra Workshop

Organizer: Andrei Jaikin
Jon González

Hosting Institution: Instituto de Ciencias Matemáticas (ICMAT)

Location: Madrid, Spain

Date: 02/03/2015-06/03/2015

3rd BMS Student Conference

Organizer: Irena Bojarovska
Gregor Bruns
Juan Orduz
Emre Sertöz

Hosting Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 18/02/2015-20/02/2015

10th AIMS Conference on Dynamical Systems, Differential Equations and Applications

Organizers: American Institute of Mathematical Sciences (AIMS)
Instituto de Ciencias Matemáticas (ICMAT)
Universidad Autónoma de Madrid (UAM)
University of North Carolina at Wilmington

Location: Madrid, Spain

Date: 07/07/2014-11/07/2014

Note: Attended as student volunteer

First Joint International Meeting of the Italian and Spanish Mathematical Societies

Societies: RSME (Royal Spanish Mathematical Society)
SCM (Catalan Mathematical Society)
SEMA (Spanish Society for Applied Mathematics)
SIMAI (Italian Society for Applied and Industrial Mathematics)
UMI (Italian Mathematical Union)

Institution: University of the Basque Country (UPV/EHU)

Location: Bilbao and Leioa, Spain

Date: 30/06/2014-04/07/2014

Note: Attended as student volunteer

2nd BMS Student Conference

Organizer: BMS Student Representatives

Hosting Institution: Berlin Mathematical School (BMS)

Location: Berlin, Germany

Date: 19/02/2014-21/02/2014

VI Edición de la Escuela JAE de Matemáticas

(6th Edition of the JAE School of Mathematics)

Organizer: Instituto de Ciencias Matemáticas (ICMAT)

Hosting Institution: ICMAT

Location: Madrid, Spain

Date: 01/07/2013-26/07/2013

XIII Encuentro Nacional de Estudiantes de Matemáticas

(XIII (Spanish) National Meeting of Mathematics Students)

Organizer: Asociaci'ón Nacional de Estudiantes de Matem'aticas (ANEM)
((Spanish) National Association of Students of Mathematics)

Location: Murcia, Spain

Date: 23/07/2012-29/07/2012

**Undergraduate Summer School Program of the
2012 PCMI Summer Session “Geometric Group Theory”**

Organizer: Aaron Bertram

Hosting Institution: IAS/Park City Mathematics Institute (PCMI)

Location: Park City, USA

Date: 01/07/2012-21/07/2012

Curso de Teoría de Grafos aplicando el método de Moore

(Graph Theory Course applying Moore’s Method)

Organizer: Luis Martínez Fernández

Hosting Institution: Faculty of Science and Technology (ZTF-FCT)
of the University of the Basque Country (UPV/EHU)

Location: Leioa, Spain

Date: 09/2011-12/2011

Undergraduate Summer School Program of the

2011 PCMI Summer Session “Moduli Spaces of Riemann Surfaces”

Organizer: Andrew Bernoff

Aaron Bertram

Hosting Institution: IAS/Park City Mathematics Institute (PCMI)

Location: Park City, USA

Date: 03/07/2011-23/07/2011

Coloquio RSME 2011: Las dos ideas de Sofia Kovalevskaya

(Colloquia RSME 2011: The Two Ideas of Sofia Kovalevskaya)

Organizer: RSME (Royal Spanish Mathematical Society)

Hosting Institution: University of the Basque Country (UPV/EHU)

Speaker: Michèle Audin

Location: Bilbao, Spain

Date: 24/06/2011

Jornadas RSME 2011: Los Problemas del Milenio

(Conferences RSME 2011: The Millennium Prize Problems)

Organizer: RSME (Royal Spanish Mathematical Society)

Hosting Institution: Universitat de Barcelona (UB)

Location: Barcelona, Spain

Date: 01/06/2011-03/06/2011

Other

Jornada SIEF y Asamblea General 2021

(2021 SIEF Conference and General Assembly)

Organizer: Sociedad de Investigadores Españoles en Francia (SIEF)

Location: Paris, France

Dates: 27/11/2021

Jornada y Asamblea Anual 2020 de la SIEF

(2020 Conference and Annual Assembly of the SIEF)

Organizer: Sociedad de Investigadores Españoles en Francia (SIEF)

Location: France (On-line)

Dates: 28/11/2020

Science+ 2017, ERA Career Day Bilbao

Description: Career days where talks and information about professional possibilities for scientists were given
Organizer: Chair of Scientific Culture of the University of the Basque Country
Bizkaia Talent
Spanish Foundation for Science and Technology (FECYT)
Institution: University of the Basque Country (UPV/EHU)
Location: Bilbao, Spain
Dates: 18/09/2017-20/09/2017

Participant at *Slam the library #2 - Poetry Slam*

Description: Poetry slam organized as part of the Lange Nacht der Wissenschaften in Berlin
Participation under the pseudonym *Iasafro Maesman* obtaining the 2nd place
Institution: University Library of the TU Berlin and UdK
Place: Berlin, Germany
Date: 06/06/2016

Reflejo de Palabras (Reflection of words)

at the **Exhibition *Reflejos. Proyecto experimental entre artistas y escritores.***

Creator: María Jesús Cueto Puente
Josué Tonelli-Cueto
Curator: Marina Gurruchaga
Rosario de Gorostegui
Institution: Biblioteca Central de Cantabria
Place: Santander, Spain
Date: 10/10/2014-04/11/2014

Curso H.1 ¿Qué hay que enseñar hoy en la escuela?

(*Course H.1 What should be taught in school today?*)

XXXIII Cursos de Verano de la UPV/EHU (XXXIII Summer Courses of the UPV/EHU)

Organizer: University of the Basque Country(UPV/EHU)
Directors: Paulí Dávila Balsara
Jaume Carbonell Sebarroja

Location: Donostia-San Sebastián, Spain

Dates: 25/06/2014-27/06/2014

Workshop 6.1 “Once upon a time...” Techniques for Storytelling in English

XXXIII Cursos de Verano de la UPV/EHU (XXXIII Summer Courses of the UPV/EHU)

Organizer: University of the Basque Country(UPV/EHU)

Director: Diana Lindsay

Location: Donostia-San Sebastián, Spain

Dates: 23/06/2014-24/06/2014

Curso “Cognición comparada entre chimpancés y humanos”

(“Compared cognition between chimpanzees and humans” Course)

Organizers: “Bionatur” Biology Students’ Association
Official Professional Association of Biologists of the Basque Country
Psychology Official Professional Association of Biscay
Faculty of Science and Technology of the UPV/EHU

Speaker: Miquel Llorente Espino

Location: Bilbao, Spain

Dates: 09/05/2014

Talentia Programme 2013-14 of Bizkaia Talent

Description: Activities and talks for career development of students

Organizer: Bizkaia Talent

Location: Province of Biscay, Spain

Dates: 01/2014-06/2014

II. Simposio UNIBASQ. La Calidad del Sistema Universitario Vasco: La Perspectiva de los Usuarios
(2nd UNIBASQ Symposium. The Quality of the Basque University System: The perspective of the User)
Organizing institution: Agency for Quality of the Basque University System (UNIBASQ)
Location: Bilbao, Spain
Dates: 16/10/2013

Poetry Recital at the opening of the exhibition *Proyecto Trait D'Union*

Curator: Matteo Acarrino
Carmela Claps
María Jesús Cueto Puente
Institution: Observatorio del Arte
Place: Arnauero, Spain
Date: 31/08/2012

Scientific Olympiads

Gold Medal in the XIV Olimpiada Iberoamericana de Física

(XIV Iberoamerican Physics Olympiad)
Hosting institution: Sociedad Chilena de Física
Date: 03/10/2009

Silver Medal and Special McGraw-Hill award to the best resolution of the theoretical part in the XX Olimpiada Española de Física

(XX Spanish Physics Olympiad)
Hosting institution: Public University of Navarra
Date: 27/04/2009

Bronze Medal in the XLV Olimpiada Matemática Española

(XLV Spanish Mathematical Olympiad)
Hosting institution: University of Girona (UdG)
Universitat Politècnica de Catalunya (UPC)
Date: 28/03/2009

LANGUAGES

Spanish	Native
English	C1
Euskera (Basque)	A2-B1
Deutsch (German)	A2

The levels given follow the Common European Framework of Reference for Languages. In this framework, the levels are, from lowest to highest, A1, A2, B1, B2, C1 and C2. The B1 level indicates *Vantage Independent Use*, the C1 level *Effective Operational Proficiency* of the language and the C2 level *Mastery* of it.

REFERENCES

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