Enrique Zuazua

Curriculum Vitae

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Short Bio

Enrique Zuazua was born in Eibar, Basque Country (Spain). He studied Mathematics at the University of the Basque Country (UPV/EHU), where he earned his degree in 1984 and completed a PhD in 1987. In 1988, he obtained a second PhD from Université Pierre et Marie Curie, Paris (UPMC/Paris 6). He was appointed Professor of Applied Mathematics at the Complutense University of Madrid (UCM) in 1990 and, in 2001, joined the Autonomous University of Madrid (UAM) as Professor.

Since 2019, he has held the Alexander von Humboldt Professorship at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), where he directs the Chair for Dynamics, Control, Machine Learning, and Numerics. He also holds part-time appointments at UAM and at the University of Deusto (UD), Bilbao, where he leads the Chair of Computational Mathematics. In addition, he collaborates with Sherpa.ai as Chief Algorithm Scientist.

His research focuses in Applied Mathematics, with a particular emphasis on Partial Differential Equations, Control Theory, Numerical Analysis, and Machine Learning. His work has been recognized through distinctions including the Euskadi (Basque Country) Prize for Science and Technology (2006), the Julio Rey Pastor National Research Prize (2007), and the W.T. and Idalia Reid Prize of the Society for Industrial and Applied Mathematics (SIAM) (2022).

He has held several academic and organizational responsibilities, among them serving as First Manager for Mathematics of the Spanish National Research Plan (1999–2002), Founding Scientific Director of the Basque Center for Applied Mathematics (BCAM) (2008–2012), and Spokesperson for the FAU Research Center for Mathematics of Data (MoD) since 2019. He was an invited speaker in the section "Control and Optimization" at the International Congress of Mathematicians (ICM) 2006 in Madrid, and is scheduled to deliver Special Section Lectures on Control Theory at ICM 2026.

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He has authored more than 450 publications and supervised over 32 doctoral theses. His research has been supported by three European Research Council Advanced Grants (NUMERIWAVES 2010, DyCon 2016, CoDeFeL 2024). He has also engaged in collaborative industrial and technology transfer projects in Spain and Germany. In addition to his editorial work with leading journals in Applied Mathematics, he actively contributes to the dissemination of science to broader audiences.

Education

1988 **PhD in Applied Mathematics**, *Université Pierre et Marie Curie*, Paris, .

1987 **PhD in Applied Mathematics**, *University of the Basque Country*, Bilbao, Basque Country, Spain, .

1985 **Master (DEA) in Numerical Analysis**, *Université Pierre et Marie Curie*, Paris, .

Current Positions

2019- Chair Professor (W3). FAU, Friedrich–Alexander-Universität Erlangen–Nürnberg in Dynamics, Control, Machine Learning and Numerics, Alexander von Humboldt Professor

2021- Speaker FAU MoD - Research Center for Mathematics of Data

2016- Director of the Chair of Computational Mathematics at Deusto Foundation, Bilbao, Spain (part-time)

2001- Full Professor in Applied Mathematics at the Autonomous University of Madrid (UAM), Spain (part-time)

Previous Positions

1987-1988 Assistant Professor, University of the Basque Country, Bilbao, Basque Country, Spain

1988-1990 Associate Professor in Mathematical Analysis at the Autonomous University of Madrid (UAM), Spain

1990-2000 Full Professor in Applied Mathematics at the Complutense University of Madrid (UCM), Spain

2008-2015 Ikerbasque Research Professor, Bilbao, Spain

Fellowships and Awards

2024-2029 **ERC Advanced Grant CoDeFeL**, (2.5M€).

2023-2027 **INRIA International Chair - Advanced Career**, France.

2022 **W.T. and Idalia Reid Prize**, SIAM.

2021 **Top Talent Ciencia Award**, Bilbao, Spain, Deia Newspaper.

2018 **Alexander von Humboldt Professor**, FAU, Germany, (3.5M€).

2018 **Invited profile in "Arbolmat"**, El Árbol de las Matemáticas, UNIVERSIA, http://www.arbolmat.com/enrique-zuazua/.

2016-2021 **ERC Advanced Grant DyCon**, (2M€).

2016-2020 **Agence Nationale de la Recherche**, France ICON Grant, (600 K€).

2015- **High-End Foreign Teacher of the University of Sichuan**, Chengdu, China.

2015- **Ambassador of FAU**, Erlangen, Germany.

2015- **Member of Academia Europaea**, .

July 2014 **Doctor Honoris Causa**, Université de Lorraine, France.

2014-2015 **Humboldt Research Award 2013**, FAU, Germany, (60 K€).

2013-2014 **CIMI Excellence Chair**, Toulouse, France, (Spring Semester).

2013-2014 **"Research in Paris" Award**, Paris City Hall , (Fall Semester).

2010-2022 **ERC Advanced Grants**, NUMERIWAVES (1.7 M€) and DyCon (2 M€).

2007 **J. Rey Pastor National Prize**, Spain.

2007- **Full member of "Jakiunde"**, the Basque Academy for Science, Arts and Letters.

2006 **Science and Technology Euskadi Prize**, Basque Government.

2004 **"Highly Cited Researcher"**, ISI Institute (Thomson).

Supervision of graduate students and postdoctoral fellows

33 PhDs (see Math Genealogy) from Brazil, Chile, China, France, Mexico, US, Romania, Spain, etc., over 70 postdocs and over 60 Master Theses and several IT managers in the Spanish and German science systems. (https://www.genealogy.math.ndsu.nodak.edu/id.php?id=88528)

Teaching Activities

1987- All levels (undergraduate, master, doctoral and research courses, etc.). At present mainly on the Master's Degree in Computational and Applied Mathematics (CAM), FAU.

Institutional Responsibilities

2021- **Spokesperson of the Research Center for Mathematics of Data (FAU MoD)**, FAU, Erlangen, Germany.

2016- **Director of the Chair in Computational Mathematics**, Deusto Foundation, Bilbao, Basque Country, Spain.

2012-2013 **Director of BCAM Chair in PDE, Control and Numerics**, BCAM, Spain.

2008-2012 **Founding Scientific Director**, BCAM, Bilbao, Spain, (17M€).

2001-2005 **Manager of the Mathematics Program**, Spanish National Research Plan.

Commissions of Trust

2022- **Scientific Council of the INSMI-CNRS**, .

2010, 2022 **Member of the "Control and Optimization" Panel of ICM2010**, Hyderabad, India and ICM 2022, Russia.

2018 **Member of the Synergy Grants Panel**, ERC, European Research Council.

2008, 2010, 2012 **Chairman of the Advanced Grants Panel for Mathematics**, ERC, European Research Council.

2011 **Chairman of the "Control and Applications" Panel of ICIAM2011**, Beijing, China.

2006 **Member of the International Program Committee**, ICM 2006, Madrid, Spain.

2009-2016 **Chairman of the Scientific Committee of CIMPA**, Nice, France.

2006- **Scientific Council of CERFACS**, Toulouse, France.

Reviewing Activities

CNRS (France), NSF (USA), AFOSR (USA), AERES (France), ANR (France), IUF (France), Paris Region (France); DFG (Germany); ERC (Brussels); Irish Research Council, Kuwait Foundation for the Advancement of Sciences (KFAS), FRS/FNRS (Belgium), NSC (Poland), CONYCIT (Chile), etc.

Membership to Scientific Societies

SIAM (Society for Industrial and Applied Mathematics)

Major Collaborations

E. Zuazua has collaborated with a rich network of scientists all around the world (169 co-authors according to MathSciNet). Many of his former PhD students and postdocs develop brilliant academic and industrial careers like, for instance: Francisco Palacios, PhD student in optimal shape design in aeronautics, group leader at "The Boeing Company", Long Beach, CA. Luz de Teresa (UNAM, Mexico), former PhD student, was the President of the Mathematical Society of Mexico and is now member of the Governing Board of UNAM. Borjan Geshkovski, former PhD student, is now a postdoc at MIT. Binh Tran Minh, former postdoc, CAREER awardee, Associate Professor at TAMU in Texas. Xu Zhang and Qi Lü,former postdocs, nos Professors in Sichuan University, Chengdu, China, were invited speakers in the "Control and Optimisation" section of ICM. Karine Beauchard and Thomas Duyckerts, former postdocs, joined the prestigious Institut Universitaire de France (IUF).

Visiting positions (>1 month)

Courant Institute, NYU; IMA, Minneapolis; Rice Univ., Houston; UPMC, Paris; Univ. de Nice; Univ. Paris-Sud, Orsay; Univ. Orléans; Univ. Versailles; Univ. Toulouse; E. Polytechnique; Isaac Newton Institute, Cambridge; UFRJ, Brazil; LNCC, Brazil; CMM, Chile, Sichuan Univ., China.

Contracts with Industry

2021- **Senior Associate Advisor**, Sherpa.ai, Bilbao, Spain.
(mathematical methods in artificial intelligence)

2018-2019 **Advisor on Science and Technology**, Eibar Municipal Council.

2015-2016 **Numerics for water management**, Consorcio de Aguas Bilbao Bizkaia [Water Board].
https://www.consorciodeaguas.eus/Web/inicio/index.aspx?cambiarIdioma=I

Present Funding

2019-2026 **Alexander von Humboldt Professorship**, (3.5M€).

2024-2029 **ERC-AdvG CoDeFeL-Control for Deep and Federated Learning**, (2.5M€).

2024 **Germany-Korea DFG bilateral exchange project "Control of multi-particle systems, mean-field limits, and applications to deep learning"**, (25.650,50 €).

2023-2024 **DASEL- Data Science and Electrical Networks, Spain, Energy Strategy**, (223.330,00 €).

2021-2024 **BACATEC cooperation Grant FAU-UCSD**, San Diego, USA, (4 K€/year).

2022-2026 **ModConFlex**, Marie Curie Action, HORIZON-MSCA-2021-DN-01, one PhD Grant.

2022-2024 **Henriette-Herz Scout Program**, Alexander von Humboldt Foundation, 3 postdoc positions, (2 years each).

2021-2024 **Kinetic equations and learning control**, Spanish Ministry of Science, (37 k€), one PhD grant.

2023-2026 **DFG TRR 154**, SFB Transregio 154 - Mathematical Modelling, Simulation and Optimization Using the Example of Gas Networks, One PhD Grant.

2022-2024 **DFG Mobility program FAU-Fudan**, Shanghai, China, Control, inversion and numerics for Partial Differential, (200 K€.).

Past Funding

1980- **PI in the Mathematics Program of the Spanish National Plan**, .

2008-2012 **Attraction of up to 17M€, including the establishment of the permanent headquarters of the centre, as Founding Scientific Director of the BCAM**, .

2006-2008 **Founding PI of the CONSOLIDER-Ingenio Research Project**, networking most mathematics teams in Spain for applied and multidisciplinary research, (7.5M€/5 years).

2008-2011 **Member of the Steering Committee of the ESF Research Networking Programme "Optimization with PDE Constraint"**, (500K€). 2010 – 2015.

218-2021 **ConFlex**, Marie Curie Training Network.
https://www.conflex.org

International Conferences

2nd ECM, Budapest, 1996; Congress de Mathématiques Appliquées à la memoire de Jacques-Louis Lions, 2002, Paris; AMAM2003, Nice; ECCOMAS 2004, Jyvaskyla; FoCM2005, Santander; ENUMATH2005, Santiago de Compostela; ICM2006; EQUADIFF 2007, Vienna; New Directions in Computational PDEs, Warwick, 2009; SIMAI 2010, Cagliari; Aachen Conference on Computational Engineering Science, 2011; SIAM Conf. Control & Appl., MD, USA, 2011; 14th International Conference on Hyperbolic Problems, Padova, Italy, 2012; CMN2013, Bilbao, Spain, 2013; CMA2014, Kuwait, 2014; 86th GAMM Annual Meeting, Salento, Italy, 2015; SIAM Conference on Control & Appl., Paris, France, 2015; IFAC-CPDE16, Bertinoro, Italy, 2016; XI Congreso Colombiano de

Métodos Numéricos, Bucaramanga, Colombia, 2017; DEA 2019, Krakow, Poland, 2019; ADENA2020, India, HAIS 2021, Bilbao; FBP 2021, Berlin; SIAM Annual Meeting, Pittsburgh, 2022; Mathematical Opportunities in Digital Twins, George Mason University, Washington DC, 2023; ICM2026

Honorary Lectures

"The Lezioni Guido Castelnuovo", Rome, 2002; "Edinburgh Mathematical Society", 2005; "Le modèle et l'algorithme", INRIA,2008; "The von Mises Lecture", Humboldt Univ., 2008; Giornada INDAM, Torino, 2009; "Celebrating Sciences", Nonlinear Physics Laboratory, UK, 2011; "Science et Société", Nancy, France, 2014; Grandes Conférences Publiques du CRM, Montreal, 2016; Perspectivas Matemáticas, IM-UNAM, México, 2016, University of Pittsburgh Michalik Distinguished Lecture Series, 2019; Natural Sciences Distinguished Lecture, Institute of Natural Sciences, Shanghai Jiao Tong University, 2020; Distinguished for HKSIAM and Hong Kong Universities, 2021; Lumer Lecture, 2022; Jilin University, Changchung, China, 2023.

Monographic Lectures and Advanced Courses

Monographic research lectures at several institutions in various countries such as Algeria, Brazil, Chile, China, Egypt, Finland, France, India, Italy, Japan, Morocco, Mexico, Poland, Portugal, Spain, Turkey and Venezuela.

Outreach Activities

Intensive outreach activity gathered in the "enzuazua": https://cmc.deusto.eus/enzuazua/

Impact Factor

(WoS/GS/ MathSciNet): Articles: 325 /-/ 387. Citations: 9,647 / 22.745 / 9.348. H-index: 49 /78/-

Languages

Basque	Mothertongue
Spanish	Mothertongue
English	Advanced
French	Advanced
German	Advanced

Links

FAU	https://dcn.nat.fau.eu/zuazua/
FAU MoD	https://mod.fau.eu/enrique-zuazua/
Deusto	https://cmc.deusto.eus/zuazua/
enzuazua	https://cmc.deusto.eus/enzuazua
ORCID	https://orcid.org/0000-0002-1377-0958
GoogleScholar	https://scholar.google.com/citations?user=t-IxzegAAAAJ