VICTORIA SÁNCHEZ MUÑOZ (SHE/HER)

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NOTE: University of Galway is shorten here as UoGalway. This CV contains hidden links, so it is advisable to see it electronically.

WORK EXPERIENCE

Postdoctoral Researcher (currently)

Université Libre de Bruxelles

Sep 2024 – ongoing Brussels, Belgium

- **Postdoctoral researcher** at Dr. Stefano Pironio's group at the Laboratoire d'Informatique Quantique at the Department of Physics.
- Tutor of Master's level course "Quantum Information Theory" from Sep-Dec 2024.

Teaching Assistant

University of Galway

Sep 2019 – Mar 2024 Galway, Ireland

- **Teaching assistant** within the School of Mathematical and Statistical Sciences for:
  - SUMS (Support for Undergraduate Mathematics and Statistics) → Award for my work (*see award section*).
  - Tutor of modules: Linear Algebra, Engineering Mechanics.
- Tutoring support for a student with disabilities at ServiSource - Education Support.
- **Lecturer** for the Access Centre at UoGalway. Lecturing and exam preparation during March 2023 for a math module offered by the Access Centre, which offers programs to students with disabilities and mature students.

Junior Consultant

Better Consultants

Sep 2017 - Jul 2018 Barcelona, Spain

Programmer in several projects; the main one was the implementation of the MiFID II directive in AndBank Luxembourg. Used COBOL and SQL.

Intern

GSI Helmholtzzentrum für Schwerionenforschung

Jul 2016 - Sep 2017 Darmstadt, Germany

- International Summer Student Program at GSI-FAIR 2016, Research for Undergraduates.
  - Worked at the FRS Ion Catcher at GSI performing data analysis to search for new exotic isomers using the specialised MAc program.
  - Advisor: Dr. Timo Dickel.

Tennis Instructor

Tennis Club

Summers '14-15'-19'-20' El Pinós (Alicante), Spain

Instructor for children between 5 and 14 by teaching them racket sports such as tennis, paddle, raquetball and ping-pong.

EDUCATION

Ph.D.

University of Galway

Oct 2019 – Mar 2024 Galway, Ireland

- Title: "Boolean games played in a triangle using bi-partite and tri-partite entanglement". Thesis available *here* and public presentation *here*.
- Supervisor: Dr. Michael Mc Gettrick.
- Examiners: Dr. Mark Howard (UoGalway), and Dr. Damian Markham (LIP6 at Sorbonne Université, Paris, France).
- PhD fully funded by the College of Science at UoGalway.
- Affiliated with the School of Mathematical and Statistical Sciences.
- Modules/courses taken (worth 5 ECTS): Cryptography; Algebraic Foundations of Quantum Computing; Supporting Learning in Mathematics; Scientific Programming Concepts; Intensive Writing Workshop.

Master's Degree in Theoretical Physics

Universidad Autónoma de Madrid

Sep 2016 – Sep 2017 Madrid, Spain

- Thesis title: "Entanglement and Geometry"
- Supervisor: Prof. José Luís Fernández-Barbón.
- GPA: 7.62 / 10.

Bachelor's Degree in Physics

Universitat de València

Sep 2012 – Jul 2016 Valencia, Spain

- Thesis title: "The subtleties of Quantum Physics in the Mach-Zehnder interferometer"
- Supervisor: Prof. Vicente Giménez Gómez.
- GPA: 8.75 / 10.

LANGUAGES

Spanish
Native

Catalan
Native

English
(April 2019) Cambridge English Advanced (CAE), Grade A. Overall score: 200/210.

German
(June 2023) Goethe-Zertifikat B1. Lesen: 99% , Hören: 93%, Schreiben: 100%, Sprechen 94%.

French
Self-taught since 2024 and also taking a course for staff at Université Libre de Bruxelles, in Brussels, Belgium.

Irish Sign Language
(Jan-Mar 2024) Introductory 10-week course on Irish Sign Language given by the Student Union at UoGalway.

SELECTED TALKS

Operator Theory and Polynomial Optimization in Quantum Information Theory
Presentation
11-14th Mar 2025 Germany

Contributed talk "Finite-size certification of randomness in semi-device-independent protocols based on photon-number constraints" at the Physikzentrum Bad Honnef, in Germany.

ICEDIM Zoom Seminar Series
Online presentation
17th Apr 2024 Ireland

Invited talk by the Irish Committee for Equality, Diversity and Inclusion in Mathematics (ICEDIM) about the article [2], winner of the Graham Hoare Prize 2022 *(see award section)* by IMA.

Seminar at University of Tokyo
Presentation
10th Apr 2024 Tokyo, Japan

Talk about the article [2], winner of the Graham Hoare Prize 2022 *(see award section)* by IMA, at the University of Tokyo at Prof. Mio Murao's group.

Des journées quantiques à AMU
Presentation
21st Sep 2023 Marseille, France

Theory of Quantum Communication, Computing and Cryptography 2023
Poster
24-28th Jul 2023 Aveiro, Portugal

Early Career Mathematicians Seminar Series
Online presentation
13th July 2023 UK

Invited talk about the article [2], winner of the Graham Hoare Prize 2022 *(see award section)*. Available *here*.

All-Island Quantum Festival at UCD
Presentation & Poster
29-30th Sep 2022 Dublin, Ireland

SIAM Annual Meeting 2022
Presentation
11-15th July 2022 Pittsburgh, US

Representative of the SIAM Student Chapter at UoGalway. Contributed with a presentation about [3].

20-24th Conference of the International Linear Algebra Society
Presentation & Poster
24th June 2022 Galway, Ireland

Presentation and poster contribution in the mini-symposium section "Mathematics of quantum information".

8th European Congress of Mathematics
Online presentation
20-26th June 2021 Portorož, Slovenia

Online presentation on the research in [3] in the mini-symposium section "Probability - A game theory and its applications" (MS - ID 56).

PUBLICATIONS

[1] V. Sánchez Muñoz, "Boolean games played in a triangle using bi-partite and tri-partite entanglement," Apr. 2024, PhD thesis. At: http://hdl.handle.net/10379/18157.

[2] V. Sánchez Muñoz, "The estimation of wind speed: Challenging the insurance company's decision," *Mathematics Today*, Dec. 2022, Winner of the Graham Hoare Prize 2022. At: https://ima.org.uk/20878/the-estimation-of-wind-speed-challenging-the-insurance-companys-decision/.

[3] V. Sánchez Muñoz and M. Mc Gettrick, "Nash equilibria in certain two-choice multi-player games played on the ladder graph," *International Game Theory Review*, vol. 23, no. 03, Jan. 2021. DOI: https://doi.org/10.1142/S0219198920500206. At: https://arxiv.org/abs/2101.09103.

GRANTS AND AWARDS

Junior Research Fellowship

by: Erwin Schrödinger International Institute for Mathematics and Physics (ESI)

May-June 2024 — Vienna, Austria

Junior Research Fellowship for 2 months to work with Dr. Borivoje Dakić at University of Vienna on *this project*.

Hackathon personal invitation

by: Horizon Quantum

Nov 2023 — Bali, Indonesia

Personally invited by the company Horizon Quantum to participate in a Hackathon from 27th Nov - 2nd Dec 2023 in Bali. Our team won one honorary prize worth $ 5000.

UK and Ireland Mathematics and Statistics Support Networks awards for Excellence

by: Sigma Network

Sep 2023 — UK and Ireland

One of the five winners of the awards for an excellent support in maths and statistics .

10th Heidelberg Laureate Forum

funder: Heidelberg Laureate Forum Foundation

Sep 2023 — Heidelberg, Germany

Selected to attend the 10th Heidelberg Laureate Forum, which brings together the recipients of the most prestigious awards in mathematics and computer science and 200 selected young researchers. I was interviewed for it (see this *link*). I contributed with a poster, a 2-minute presentation (at this *link*), and a drawing for the intercultural project. I also received an Abbe Grant to cover all costs related to the forum, issued from the Carl-Zeiss-Stiftung foundation, given only to 30 young researchers.

Graham Hoare Prize 2022

by: Institute of Mathematics and its Applications (IMA)

Dec 2022 — UK

My article [2] won the Graham Hoare Prize 2022, awarded annually to Early Career Mathematicians by the IMA for "a brilliant Mathematics Today article".

High-level Mobility Grant

funder: French Embassy in Ireland and Campus France

May 2022 — Paris, France

1-month mobility grant to work with Dr. Damian Markham at his group LIP6 at Sorbonne Université (Paris, France).

European Kovalevskaya Travel Grant

funder: Deutsche Mathematiker-Vereinigung and European Mathematical Society

Dec 2021 — St. Petersburg, Russia

Travel grant to attend the International Congress of Mathematics (ICM) 2022 in St. Petersburg, Russia, in July 2022. *The travel grant was cancelled because the ICM 22 was moved online due to the Russian invasion of Ukraine.*

PhD Scholarship

funder: College of Science at University of Galway

Oct 2019-2023 — Galway, Ireland

Fully-funded PhD scholarship at the School of Mathematical and Statistical Sciences at UoGalway.

International Summer Student Program at GSI, Research for Undergraduates

funder: GSI Helmholtzzentrum für Schwerionenforschung

Jul-Sep 2016 — Darmstadt, Germany

Scholarship to participate in the two-month International Summer Student Program at GSI-FAIR 2016, Research for Undergraduates.

OUTREACH

Talk for International Day of Women in Mathematics *(12 May '25)*

Invitation to give a public talk to high school students for RIA-ICEDIM Women in the Mathematical Sciences Day, 12 May 2025, at the University of Galway, Ireland. Title of talk "Why Maths?". In a one talk there were around 30 female students of 5th year (16-17 yo), and in the second talk there was a mixed group of 30 students of Transition Year (15-16 yo).

International Day of Women in Science *(11 Feb '25)*

Coordinated by CEBE for the International Day of Women in Science 2025, I did a workshop in Spanish on the game Quantum Tic-Tac-Toe at a school in Brussels for 12-13-year-old students. Also, I made a poster for the event "Journée Internationale des Femmes et des Filles de Science" at Université Libre de Bruxelles.

Poster and interactive board on hat tile *(Feb '24)*

For the School of Maths at UoGalway I created a small poster (also with a braille version) about the newly discovered hat tile and an interactive board made of velcro to cover it by attaching and playing with a few hat tiles.

Seminar on quantum games *(Dec '23)*

Invited by QWorld to give a seminars during the QJam2024 "Making Quantum Games" from my experience designing and developing a workshop on the Quantum Tic-Tac-Toe (*see details below*).

Documentary screening + poster *(12th May 2023)*

For the International Day of Women in Mathematics a professor and I organised a screening of the documentary “Secrets of the Surface: The Mathematical Vision of Maryam Mirzakhani" at UoGalway and also made a poster about her.

Workshop on Quantum Tic-Tac-Toe *(Apr 2022/23)*
Full development of a 1-hour workshop based on my own programmed version of the game Quantum Tic-Tac-Toe*. It is intended to illustrate some concepts of quantum physics to children between 10-12 years old. I have conducted 9 workshops in schools in Galway. Game available at this *link*. **The game is based on this article by Allan Goff in 2006.*

Talk for Maths Soc *(22nd Feb 2023)*
Outreach talk “~~EA~~ PD ~~Sports~~ - it’s in the (quantum) game" for Maths Society at UoGalway.

Threesis at University of Galway *(15th Nov 2022)*
Applicant to Threesis 2022 at UoGalway with talk “to quantum or not to quantum". UoGalway’s Threesis is a research communications training programme and competition. The participants must present their research in 3 minutes with 3 slides.

Bright Club Ireland Galway *(20th Oct 2022)*
10-minute math-related monologue for Bright Club Ireland Galway during Maths Week.

Outreach talk at Universitat de València *(5th July 2022)*
Outreach talk titled “The (quantum) game of life” at Escola d’Estiu Erasmus 2022 E3F (Summer Erasmus School) at the Physics Department at Universitat de València (Valencia, Spain).

Outreach talk for World Quantum Day 2022 *(14th April 2022)*
As a main coordinator of QIreland, organised and delivered a talk titled “Friendly introduction to quantum games” for World Quantum Day 2022.

Maths Enrichment Program at UoGalway *(2nd April 2022)*
Contributor with a 2-hour online lecture on Geometry aimed at senior cycle students (16-17 years old).

Outreach article at RTÉ Brainstorm *(Nov 2021)*
Article “What has quantum computing got to do with my cybersecurity?" at RTÉ (Ireland’s National Television and Radio Broadcaster) Brainstorm.

Outreach article at ResearchFeatures *(Oct 2021)*
Outreach article about paper [3] on the website ResearchFeatures. Available *here*.

Online Quantum Game Jam *(30th Sep - 3rd Oct 2021)*
Quantum physics expert in the Online Quantum Game Jam 2021. Our team developed an educational quantum game called “Heisenberg’s Bicycle". The main game developer was Andy Dodson.

FameLab Ireland Galway Heat 2021 *(May 2021)*
Application to FameLab Ireland 2021 in the Galway Heat with this *video*.

Mini-workshop on Möbius strips *(Nov 2020)*
Within the Outreach Committee at the School of Maths at UoGalway, we produced a video of a workshop of Möbius strips for the Galway Science & Technology Festival 2020.

Educational YT channel *(Sep 2014 - Jul 2016)*
Founder member of the Spanish educational YouTube channel "Tippe Top Physics" (now known as "Gastrofísica").

WORKSHOPS

Leadership and Supervision in Academia *(2-3rd Apr 2025)*
7-hour online workshop delivered by Matteo Garavoglia from Impulsplus. Organised by Alumnode.

Coaching on Public Speaking *(Feb-Jun 2025)*
2-hour sessions once a month for 5 months aimed at improving presentation and public speaking skills. Organised by Université Libre de Bruxelles, in Brussels, Belgium, and delivered by Jean-Sébastien Pigeau.

Innovation: Creativity and Scientific Collaboration *(30th Nov 2024)*
4-hour workshop “Untie your innovation potential: creativity and scientific collaboration with Jara Pascual” delivered in Spanish, organised by CEBE (Spanish Scientists in Belgium) at Instituto Cervantes in Brussels, Belgium.

Diversity in Science *(7-9th Nov 2024)*
Invitation to attend a 5-hour workshop “Diversity in Science” organised by Alumnode during the Falling Walls Science Summit on 7-9th November 2024 in Berlin, Germany.

Self-organisation and time management *(8th Aug 2024)*
4-hour online workshop delivered by Sashima Läbe from TwentyOne Skills. Organised by Alumnode.

Project Planning for PhDs *(24th Apr 2024)*
7-hour online workshop given by Fistral Training and Consultancy and organised by UoGalway.

Gender Identity, Expression, and Diversity *(23rd Apr 2024)*

1.5-hour online workshop given by ShoutOut and organised by UoGalway.

Grant Applications in SciComm *(14th Mar 2024)*
4-hour online workshop “How to succeed in grant applications with Science Communication”. Organised by Alumnode.

Inclusivity in STEM *(11th Mar 2024)*
3-hour in-person workshop “Inclusivity in STEM”. Organised by Cell EXPLORERS at UoGalway and Kinderbüro at University of Vienna.

Elevating your CV *(7th Mar 2024)*
2-hour online workshop “Elevating your CV and convince with your applications”. Organised by Alumnode.

Race Equality Training *(22nd Nov 2023)*
2-hour workshop about race equality. Organised by Human Resources at UoGalway.

Effective Presentation Skills *(21st Nov 2023)*
7-hour workshop about presentation skills. Organised by the Research Development Centre at UoGalway.

Assertiveness Skills *(9th Nov 2023)*
3-hour training to be more assertive. Organised by the Research Development Centre at UoGalway.

Growing Resilience *(9th Nov 2023)*
3-hour training for PhD researchers to grow resilience. Organised by the Research Development Centre at UoGalway.

safeTALK *(13th Oct 2023)*
3-hour training at UoGalway to identify and engage with persons who may be having suicidal thoughts.

First Point of Contact *(Apr - May 2023)*
12-hour training at UoGalway to deal appropriately with a disclosure of sexual violence.

Disability Student Service Training *(5th Apr 2023)*
2-hour training with the Disability Student Support Center at UoGalway on how to support students with disabilities.

Active Consent Workshop *(23th Jan 2023)*
2-hour Workshop on Active Consent and eLearning module on “Sexual Violence and Harassment: How to Support Yourself and Your Peers", delivered by UoGalway.

Respect Workshop *(12th Dec 2022)*
1.5-hour workshop at the School of Maths at UoGalway towards developing a respect charter in college.

Decarbonising Research Methods *(18th Nov 2022)*
Half-day workshop organised at UoGalway.

#EndDeathByPowerPoint *(Oct 2022)*
2-hour workshop about presentation skills organised at UoGalway and delivered by Dr. Echo Rivera, from Creative Research Communications.

Masterclass *(15-19th Aug 2022)*
Masterclass about “The mathematics of quantum entanglement via nonlocal games" organised by the University of Copenhagen in Copenhagen (Denmark). The two keynote lecturers were Thomas Vidick and Vern I. Paulsen.

Podcasting your research *(26th Apr 2022)*
1-hour workshop organised by the Research Development Centre at UoGalway.

How to stay well in research *(6th Apr 2020)*
2-hour workshop organised by the Research Development Centre at UoGalway and delivered (online) by Hugh Kearns from IThinkWell.

Turbocharge your writing *(24th Jan 2020)*
3-hour workshop organised by the Research Development Centre at UoGalway and delivered in-person by Hugh Kearns from IThinkWell.

MEMBERSHIPS

Current memberships

QSNP Junior Scientists Community *(Mar 2024 - ongoing)*
Community of the European Quantum Flagship project Quantum Secure Networks Partnership (QSNP).

CEBE *(Oct 2024 - ongoing)*
Científicos Españoles en Bélgica CEBE (Spanish Scientists in Belgium).

Alumnode *(Oct 2023 - ongoing)*
Network composed by alumni of a variety of programs and institutions, all funded by the Klaus-Tschira Stiftung. I joined after my participation at the 10th Heidelberg Laureate Forum in Sep 2023.

IMA *(Sep 2021 - ongoing)*
Institute of Mathematics and its Applications (IMA) in the UK.

Past memberships

SIAM *(Nov 2019 - Mar 2024)*
Society for Industrial and Applied Mathematics (SIAM) Student Chapter at UoGalway. President during academic years 2021-2023.

Outreach Committee *(Dec 2019 - Mar 2024)*
Postgraduate representative and member of the Outreach and Communication Committee at the School of Mathematical and Statistical Sciences at UoGalway.

University Women's Network at UoGalway *(Dec 2020 - Mar 2024)*

Women in Quantum *(Mar 2021 - Jul 2024)*

QIreland *(May 2021 - Jan 2023)*
Co-founder and main coordinator of QIreland until September 2022. Regular member since.

Open Scholarship *(Oct 2021 - Mar 2024)*
Active member of the postgraduate community for Open Scholarship at UoGalway.

Feminist Society *(Jan 2024 - Mar 2024)*
Ordinary committee member of the Feminist Society at University of Galway.

OTHER SKILLS

Conference Organisation *(20-21st May 2025)*
Local organiser of the Quantum Secure Networks Partnership (QSNP) General Assembly 2025 and Industry Hub on 20-21st May 2025 in Brussels, Belgium.

Conference Organisation *(9th Dec 2022)*
While president of the SIAM Student Chapter at UoGalway, we organised the 9th Annual Irish SIAM Student Chapter Conference.

Seminar Organisation *(Mar 2021 - May 2022)*
Co-organiser of a weekly seminar for postgraduates at the School of Maths at UoGalway.

CPR course *(28th Jan 2022)*
Completed the cognitive and skills evaluations in accordance with the curriculum of the American Heart Association Heartsaver CPR AED Program.

Digital badge *(May 2021)*
General Data Protection Regulations (GDPR), issued by UoGalway.

Digital badge *(March 2020)*
Mathematics Learning Support: Communication Skills, issued by the National Forum for the Enhancement of Teaching and Learning in Higher Education.

COMPUTER SKILLS

Mathematica *(advanced)* | Julia *(advanced)*
Python *(intermediate)* | Matlab *(basic)*
C++ *(basic)* | SQL *(basic)* | COBOL *(basic)*

PERSONAL INTERESTS

Books | Racket sports (*tennis, padel, squash*)
Running | Yoga | Fitness (*High Intensity Training*)
Cinema | Piano | Languages (*German and French*)