



Rebeca Gonzalez Suarez

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Scientific bio

I was involved in Higgs boson physics since the start of my PhD, covering the [search for the Higgs boson](#) all the way to the observation of $t\bar{t}H$ in 2018. I was the Higgs to WW subgroup convener in the CMS experiment 2015/16. In 2011 I started studying top quarks, becoming the single top subgroup convener in 2013 after achieving the [first observation of single top \$tW\$](#) . I coordinated the whole [Top Quark Physics Analysis Group](#) in CMS from 2016 until 2018, when I left CMS to join the Uppsala ATLAS group with an individual starting grant. While in CMS, I worked in detector operation, in the DT Muon chambers, and the Silicon Strip Tracker. In ATLAS, I coordinated the [Outreach & Education](#) activity, and was involved in the Hardware Track Trigger for the Phase-II Upgrade.

Currently, my group searches for [dark sectors](#) in unconventional final states, including [long-lived particles](#). Beyond this, [machine learning](#) techniques for high energy physics and the new physics reach of [future colliders](#) are my top priorities. Concerning the later I convene BSM groups for the [\(ECFA\) Higgs Factory Study](#) and within the Physics Performance group for the [Future Circular Collider \(FCC\)](#). In 2024 I was selected to be the [BSM physics working group convener](#) for the next Update of the European Particle Physics Strategy.

Current position

2023- **Senior Lecturer/Associate Professor, Universitetslektor Docent**, at the Department of Physics and Astronomy, High Energy Physics division, Uppsala University, Sweden

Previous positions

2018-2023 **Researcher**, *Uppsala University*, SE
2012-2018 **Adjunct Research Associate**, *University of Nebraska, Lincoln*, US
2010-2012 **Post-doctoral fellow**, *Vrije Universiteit Brussel (VUB)*, BE
2006-2010 **PhD Student**, *Instituto de Fisica de Cantabria (IFCA)*, ES

Education

2020 **Docent**, *Eq. to German habilitation (14 January)*, Uppsala University, SE
2010 **Ph.D.**, *(9 September)*, University of Cantabria, ES
2007 **DEA, Diploma de Estudios Avanzados**, *University of Cantabria*, ES
2005 **Degree in Fundamental Physics**, *Universidad de Oviedo*, ES

Ph.D Thesis

title 'Search for the SM Higgs Boson in the $H \rightarrow WW^* \rightarrow 2\mu 2\nu$ decay channel at the CMS experiment of the LHC' [[link](#)]
supervisors Javier Cuevas and Teresa Rodrigo Anoro

International Collaborations

2024- Member of the FCC International Collaboration (Uppsala team leader, Collaboration Board member)
2018- Member of the ATLAS Collaboration at CERN (Uppsala deputy team leader)
2006-2018 Member of the CMS Collaboration at CERN

Grants and awards

- 2024 **COST Open Call Proposal**, *EPIGRAPHY - Edge Deep Learning for Particle Physics (OC-2024-1-27926)*, EU, (co-applicant)
- 2023 **Vetenskapsrådet Project Grant**, *Swedish Research Council, Individual (VR 2023-03403)* 4 years, SE
Ai4Research, *Awarded research project in artificial intelligence and machine learning 2024, Uppsala university*
TUFF-medel 2023, *Funding for pedagogic development, from the disciplinary domain of science and technology, Uppsala university, SE (co-applicant)*
- 2022 **i-LINK Grant**, *Co-applicant in international network grant for cooperation and travel (ILINK22043)*, ES
- 2021 **TUFF-medel 2022**, *Funding for pedagogic development, from the disciplinary domain of science and technology, Uppsala university, SE*
Carl Tryggers Stiftelse, *Funding for recruiting a postdoc for 2 years, from the Carl Trygger foundation (CTS 20:1169)*, SE
- 2020 **Bergstedt prize**, *Bergstedtska priset from the Royal Society of Science in Uppsala, Sweden, for "her contribution to the discovery of the Higgs particle and precision studies of its properties"*
- 2019 **CIM project**, *Co-funding of a PhD position. Center for Interdisciplinary Mathematics, Uppsala University, SE*
- 2018 **Vetenskapsrådet Starting Grant**, *Swedish Research Council, Individual (VR 2017-05092)* 4 years, SE
- 2017 **Future Fellowship Grant**, *Australian Research Council, Individual (FT170100088)* 4 years (Declined to move to Uppsala), University of Adelaide, AU

Sabbaticals and stays

- 2025 **Aspen Center for physics**, *Summer program, workshop: Collider Physics at the LHC and Beyond*
- 2024 **Ai4Research**, *50% sabbatical focused on ML/AI, Uppsala university*
- 2008-today **CERN**, *regular stays (100% presence 2008-2018)*

Coordination and Leadership positions

Ongoing:

- **Convener** of the BSM physics working, Update of the European Particle Physics Strategy [2024 - 2026]
- **PI** of the high energy physics eSENCE program, Uppsala University. [2024-]
- **Convener** of the BSM Physics Performance group for the Future Circular Collider (FCC). [2022-]
- **Convener of ECFA WG1-SRCH**. Convener of the ECFA Higgs Factory Study - subgroup on direct discovery potential, including Feebly Interacting Particles. [2021-]

Former:

- **Outreach Coordinator**. Activity Coordinator the Education and Outreach group of the ATLAS Collaboration. Reporting to ATLAS spokesperson team. Elected. [2021-2023]
- **Top convener**. Coordinator of the top quark Physics Analysis Group of the CMS experiment. Level 2 management within the CMS collaboration. Physics coordination. [2016-2018]
- **Higgs to WW convener**. Coordinator of the Higgs to WW physics in the CMS experiment. Level 3 management within the CMS collaboration. Higgs group. [2015-2016]
- **Single Top convener**. Coordinator of single-top-quark related physics in the CMS experiment. Level 3 management within the CMS collaboration. Top group. [2013-2014]
- **Run Field Manager**. Coordinating the operations of the CMS experiment on-site in LHC point 5, link between the shift crews and Run coordination. [2015-2017]

Institutional Responsibilities - Uppsala University

- Uppsala **Co-director** (vice koordinator) of eSENCE, the e-science collaboration, Uppsala University. [2025-]

- **Department Board.** Member of the Board, Department of Physics and Astronomy, elected [2022-2024]
- **Elektorsförsamling 2023-2025 för Teknat.** Electoral Assembly within the Faculty of Science and Technology, personal alternate, elected [2023-2025]
- *Seminar organizer.* Weekly seminars in Nuclear and Particle physics [2019-2021]
- Member of the Equal Opportunities Group at the Physics and Astronomy Department [2020]

Board/Committee participation

- Member of the **Collaboration Board Chair Advisory Group (CBCAG)**, ATLAS Collaboration [2024-]
- Member of the **International Organizing Committee of the Higgs conference** (representative of the Future Accelerators experiments) [2025-2027]
- Plenary **ECFA Country delegate** for Sweden [2024-]
- FCC National contact for Sweden [2020-]
- Member of the **Advisory Committee of CERN Users (ACCU)**, representing Sweden [2020-]
- Member of the board of the section for Elementary and Astroparticle Physics of the Swedish Physical Society (*Svenska Fysikersamfundet, Sektionen för elementarpartikel och astropartikelfysik*). [2023-]
- Member of the board of the exterior section of the Spanish Physical Society (*Real Sociedad Española de Física (RSEF) - sección exterior*) [2023-]
- Member of the ATLAS survey Analysis team [2024-]
- Member of the **Group of Experts for the ATLAS Outstanding Achievements Award** evaluation, as former Activity Coordinator [2024]
- Member of the Search Committee for the ATLAS Spokesperson election [2024]
- ATLAS Representative at the International Particle Physics Outreach Group (IPPOG) collaboration board [2022-2023]

Reviewing/Refereeing/Jury duties

- **Editorial Boards.** Member of 2 editorial boards in the ATLAS experiment. [2019-]
- **Analysis Review Committees.** Member of 22 internal editorial boards in the CMS experiment, **chair of 6** of them. Most appointed postdoc in this kind of committees in CMS at the time. [2011-2016]
- **Funding panel.** Member of the Physics Fellowship panel of the Research Foundation Flanders (FWO). Junior & Senior postdoctoral fellowship applications: W&T2PD - Physics. [2022-2024]
- *External Reviewer* for research grants submitted to different funding programs in Europe (France, Belgium, UK and Republic of Ireland), Asia (Hong-Kong), and Oceania (Australia) since 2016.
- **Journal Referee:**
 - Physical Review Letters (**PRL**) [2025-], Nucl. Phys. B [2025-]; Physical Review D (**PRD**) [2024-]; Journal of High Energy Physics (JHEP) [2024-]; European Physical Journal C (EPJC) [2018-].
- Poster sessions: CMS week (**chair**) [2011]; LHCP (jury member) [2024]; ECFA workshop (jury member) [2024].
- Member of the jury for the first 'ACES-Margarita Salas Award' [link] [2021]

Participation in Recruitment committees

- (2022) - The Niels Bohr Institute, Faculty of Science, University of Copenhagen. (211-0435/22-2E) Fixed-term Associate Professor of Quantum Science Education.
- (2022) - Department of Physics and Astronomy Uppsala University. (UVF-PA 2022/2541) Postdoktor inom experimentell hadronfysik.
- (2022) - Department of Physics and Astronomy Uppsala University. (UFV-PA 2022/2209) Doktorand i experimentell hadronfysik.

Other responsibilities

- *Coordinator* of the FCC-ee LLP case study within the FCC feasibility study. [2020-2022]
- *Contact person.* Monte Carlo Simulation, Higgs to WW subgroup, CMS experiment. [2014-2015]
- *Contact person.* Local reconstruction of the Strip Tracker, CMS experiment. [2011-2012]
- *Contact person.* High Level Trigger for the Strip Tracker, CMS experiment. [2011-2012]

Teaching

University courses:

- 2025- **Physics Fails (5.0c) [FTN0500]**, *Course responsible, Examiner and Teacher*, PhD course, Department of Physics and Astronomy, Uppsala University, SE
- 2025- **Mechanics (5.0c) [1FA104]**, *Teacher*, Bachelors level, First year, Department of Physics and Astronomy, Uppsala University, SE
- 2019- **Modern Physics (5.0c) [1TE078]**, *Examiner and Teacher*, Bachelors level, Department of Materials Science and Engineering, Uppsala University, SE
- 2024- **Project in Physics and Astronomy (30.0 c) [1FA193]**, *Examiner*, Masters level, Department of Physics and Astronomy, Uppsala University, SE
- 2024- **Advanced Physics - Project Course (15.0c) [1FA195]**, *Examiner*, Masters level, Department of Physics and Astronomy, Uppsala University, SE
- 2024- **Advanced Physics - Project Course (10.0c) [1FA565]**, *Examiner*, Masters level, Department of Physics and Astronomy, Uppsala University, SE
- 2024- **Advanced Physics - Project Course (5.0c) [1FA566]**, *Examiner*, Masters level, Department of Physics and Astronomy, Uppsala University, SE

Former courses:

- 2021-2024 **Advanced Particle Physics (10.0c) [1FA355]**, *Course responsible, Examiner, Teacher*, Masters level, Department of Physics and Astronomy, Uppsala University, SE
- 2021-2022 **Application-Oriented Deep Learning in Physics [5.0c]**, *Guest lecturer: 'Machine learning for particle physics at the LHC'*, Freestanding course, Department of Physics and Astronomy, Uppsala University, SE

Schools:

- 2025 **12th KSETA plenary workshop**, *Invited lecture: The Future Circular Collider (FCC) at CERN*, (10-12 March) Haus Saron in Wildberg, DE
- 2024 **PSI Particle Physics Summer School: From Low to High: Particle Physics at the Frontier**, *Teacher: The Standard Model and Beyond*, (4-10 August) Zuz, CH
- 2021 **COST Advanced School on Physics of Dark Matter and Hidden Sectors: from Theory to Experiment**, *Organizer and Teacher: Non-standard collider signatures: long-lived particles*, (18-21 October) Hybrid format - Lund University, SE
- 2019 **Hadron Collider Physics School (HASCO) 2019**, *Teacher: Introduction*, (21- 26 July) University of Goettingen, DE
- 2019 **Partnership for Innovation, Education and Research (PIER) Graduate Week**, *Speaker: Scientific colloquium*, (23 - 26 Sep) DESY, Hamburg, DE

Formal pedagogic training

- **Hands-on: renew your online teaching** - 2021, Uppsala University (SE). **(6 hours)**.
- **Supervising Students for Degree Projects** - 2019, Uppsala University (SE). **(2 weeks)**.
- **Academic Teacher Training Course** - 2018, Uppsala University (SE). **(5 weeks)**.
- **Supervising PhD Students** - 2018, Uppsala University (SE). **(3 weeks)**.
- **Supervising student presentations - in theory and in practice** - 2018, Uppsala University (SE). **(2,5 days)**.
- **Student-centered teaching and learning** - 2018, Uppsala University (SE). **(3 hours)**.

Supervision of students

- **PhD students**
 - (Main Supervisor) Axel Gallén (2023-)
 - (Main Supervisor) Olga Sunneborn Gudnadottir (PhD May 2024)
 - (Visiting student) Baibhab Pattnaik, from University of Valencia (2023)
 - (Co-supervisor) Christina Dimitriadi (PhD May 2024)

- (Co-supervisor) Jonas Steentoft (Lic. 2022)
- **MSc**
 - Erwan Sebastien Larie and Anastasios Kakos (2025)
 - Eva Mayer (2023)
 - Lovisa Rygaard (2022)
 - Rohini Sengupta (2021)
 - Olga Sunneborn Gudnadottir (2019)
 - Isis Marina Van Parijs (2013)
- **Bachelor**
 - Linnéa Heinemann (2025)
- **CERN summer student supervisor** Isis Marina Van Parijs (2012) Ivan Shvetsov (2013)
- Supervisor of multiple project students (2018-)

Participation in Thesis Boards

- 2025 **PhD thesis committee** (13th - June) Stockholm University, SE 'Searches for New Physics in the Top and Higgs Sectors Electroweak $t\bar{t}Wj$ Production and New Bosonic Resonances in the ATLAS Experiment' by Dongwon Kim. **Opponent**.
- 2024 **PhD thesis committee** (14th - November) Institut Polytechnique de Paris (ED IP Paris), FR 'Search for resonant Higgs boson pair production in the $b\bar{b}\tau\tau$ decay channel and developments in the reconstruction of High Granularity Calorimeter trigger primitives with the CMS detector at the LHC' by Bruno Alves. **Rapporteuse (referee)**.
PhD thesis committee (27th - September) Uppsala University, SE 'Analysis of Gamma and Neutron Emission for Predicting Decay Heat in Spent Nuclear Fuel' by Virginie Solans. **Chair** of the examination committee.
External Referee for PhD thesis (January) University of Zurich, CH 'Searches for New Physics in Top-Antitop Associated Production Processes and Mechanical Design and Thermal Performance of the CMS Inner Tracker Endcap Pixel Upgrade' by Sascha Liechti.
- 2023 **PhD thesis committee** (15th - December) Uppsala University, SE 'Isomeric yield ratios in nuclear fission' by Zhihao Gao. **Chair** of the examination committee.
- 2021 **PhD thesis committee** (reserve) (23rd - September) Universidad de Oviedo, ES 'Study of beyond the Standard Model processes in leptonic final states with the CMS detector at the Run II of the LHC' by Carlos Erice.
- 2020 **PhD thesis committee** (11th - December) Lund University, SE 'Study of Ξ -Hadron Correlations in pp Collisions at $\sqrt{s}=13$ TeV Using the ALICE Detector' by Jonatan Adolfsson **ALICE thesis award**.
Licentiate thesis Reader (18th - November) Stockholm University, SE 'b-jet identification and searches for supersymmetry, dark matter and Higgs boson pair production with the ATLAS experiment' by Laura Pereira Sánchez [link].
PhD thesis committee (reserve) (11th - September) Universidad de Oviedo, ES 'Search for new physics in events with high transverse momentum leptons with the CMS detector at the LHC' by Sergio Sanchez Cruz.
- 2019 **External Examiner at viva** (15th - September) University of Glasgow, UK 'Boosting to the Top: Measurements of Boosted Top Quarks and Higgs Bosons with the ATLAS Detector at the Large Hadron Collider' by Michael James Fenton.
PhD thesis committee (13th - September) Universidad de Oviedo, ES 'Study of processes with a pair of top-antitop Quarks and missing transverse energy in the final state in proton-proton collisions with the CMS detector at the Run 2 of the LHC' by Juan Rodrigo Gonzalez Fernandez.
- 2018 **PhD thesis committee** (13th - December) Uppsala University, SE 'Isomeric yield ratio measurements with JYFLTRAP: In quest of the angular momentum of the primary fragments' by Vasileios Rakopoulos. **Chair** of the examination committee.
PhD thesis committee (9th November - 18th December) Bristol University, UK; and Vrije Universiteit Brussel, BE 'Precision measurements of differential $t\bar{t}$ production cross sections as a function of kinematic event variables at 13 TeV at CMS' by Douglas John Paul Burns.
PhD thesis committee (12th October) Uppsala University, SE 'Enhancing the performance of the Digital Cherenkov Viewing Device - Detecting partial defects in irradiated nuclear fuel assemblies using Cherenkov light' by Erik Branger.
PhD thesis committee (19th March) Vrije Universiteit Brussel, BE 'Direct measurement of the top quark decay width in the muon+jets channel using the CMS experiment at the LHC' by Lieselotte Moreels.
- 2016 **PhD thesis committee** (16th September) IUT de Colmar, FR 'Recherche d'événements monotop dans le canal leptonique avec l'expérience CMS du LHC' by Michael Buttignol.
- 2015 **PhD thesis committee** (20th March) Uppsala University, SE 'Search for a Charged Higgs Boson in ATLAS and

Development of Novel Technology for Future Particle Detector Systems' by Daniel Pelikan.

- 2013 **Master thesis promotor** (24 June) Vrije Universiteit Brussel, BE '*Measurement of the single top tW associated production in the dilepton decay channel in proton proton collisions at a center of mass energy of 8 TeV*' by Isis Marina Van Parijs.
- 2011 **PhD thesis committee** (reserve) (23 April) Universidad Complutense de Madrid, ES '*Measurement of the inclusive production cross-section of W bosons in proton-proton collisions at $\sqrt{s}=7$ TeV in the CMS experiment at the LHC*' by Maria Cepeda Hermida

Seminars

- 2025 **Laboratory for Particle Physics Colloquium, Paul Scherrer Institute (PSI)**, '*Beyond the Standard Model Searches at present and Future Colliders*', (February 27), Villigen, CH
- 2023 **Seminar at the Solid State physics division of the Department of Materials Science and Engineering, Uppsala University**, '*Why do we need to go beyond the standard model at particle colliders and how to do it?*', (October 26), Uppsala, SE
- Helsinki Institute of Physics, cosmology seminar**, '*Dancing in the dark: exploring dark sectors at particle colliders, present and future*', (September 6), Helsinki, FI
- 2022 **Oskar Klein Centre Colloquium**, '*Staying alive after the LHC*', (March 8), Stockholm, SE
- 2021 **Physics Colloquia - University of Exeter**, '*Staying alive? - New physics at the LHC and beyond*', (October 29), Exeter, UK
- University of Siegen**, '*Long-lived particles at the FCC-ee*', (May 4), Siegen, DE
- 2020 **Virtual Colloquium at the Physics and Astronomy Department of Michigan State University**, '*Staying Alive - New Physics at the LHC and beyond*', (October 29), Michigan, US
- Helsinki Institute of Physics**, '*Long live the Large Hadron Collider*', (May 5), Helsinki, FI
- 2019 **Université Catholique de Louvain**, '*A Hardware Track Trigger for ATLAS at the HL-LHC*', (October 24), Louvain-la-Neuve, BE
- University of Texas at Austin**, '*A Hardware Track Trigger for ATLAS at the HL-LHC*', (July 15), Austin TX, US
- 2018 **Uppsala University**, '*At the top of the Large Hadron Collider*', (September 6), Uppsala, SE
- 2017 **Workshop on top physics at the LC 2017**, '*Recent LHC results*', (June 8), CERN, CH
- University at Albany**, '*It is not lonely at the top: studying the heaviest quark at the LHC*', (February 16), Albany, NY, US
- University of Kansas**, '*It is not lonely at the top: studying the heaviest quark at the LHC*', (January 23), Lawrence, KS, US
- 2016 **University of Zurich**, '*Top quark physics in Run 2 with the CMS experiment*', (December 5), Zurich, CH
- UK HEP Forum**, '*Top physics*', (November 3), Abingdon, UK
- Teilchenkolloquium - Particle Physics Colloquium at University of Heidelberg**, '*Top quark physics at 13 TeV with the CMS experiment at the LHC*', (July 5), Heidelberg, DE
- 2015 **Stony Brook University**, '*Top quark and Higgs boson physics at the LHC*', (December 17), Stony Brook, NY, US
- Wine & Cheese: Fermilab Joint Experimental - Theoretical Physics Seminar**, '*Recent Results from CMS on Top and Higgs*', (November 20), Fermilab Batavia, IL, US
- LPC Physics Forum**, ' *$H \rightarrow WW$ at CMS*', (August 13), Fermilab Batavia, IL, US
- University of Nebraska, Lincoln**, '*Higgs boson decays to WW at CMS*', (August 10), Lincoln NE, US
- University of Goettingen, II. Physikalisches Institut**, '*Overview of single top physics in CMS with Run-1 data*', (June 19), Goettingen, DE
- Université Catholique de Louvain**, '*Is it the Higgs? Characterization of the $H(125)$ resonance (spin, parity, tensor structure) with leptonic WW decays*', (March 18), Louvain-la-Neuve, BE

- EPFL Lausanne, 'Overview of single top physics in CMS with Run-1 data', (March 2), Lausanne, CH
- 2014 CERN Collider Cross Talk, ' $H \rightarrow WW$ from ATLAS and CMS', (November 27), CERN, CH
- LHC seminar, 'Recent top physics results from CMS', (February 25), CERN, CH
- 2013 Uppsala University, 'Overview of single top results at the LHC', (October 10), Uppsala, SE

Conferences, Workshops, Other

- 2025 Aspen Center for physics, Summer program, Workshop: Collider Physics at the LHC and Beyond, (7-11 July) Aspen, CO, US
- Open symposium on the European Strategy for Particle Physics, Chair of the BSM sessions, and invited plenary talk: "Experimental programs to address open issues in BSM physics", (23-27 June) Lido - Venice, IT
- FCC week 2025, Scientific program committee, collaboration board meeting, Invited talk: "Review BSM", (19-23 May) Vienna, AT
- 8th FCC Physics Workshop, Talk: "Nordic+Baltic countries", (13-17 Jan) CERN, CH
- Spåttind 2025: The 28th Nordic Particle Physics Meeting, Invited talk: "Future Circular Collider (FCC)" and panel discussion, (2-7 January) Skeikampen, NO
- 2024 XVI CPAN DAYS, Invited talk: "Physics cases for Future Colliders", (19-21 November) Madrid - given virtually, ES
- HIGGS 2024, Program committee, local organizing committee, chair of the closing session, (4-8 November) Uppsala, SE
- ATLAS/FCC Sweden day, Chair, talk: "Talking points", (23 October) Uppsala, SE
- Partikeldagarna 2024, Organizing committee, talk: "News from ACCU", (21-22 October) Uppsala, SE
- 3rd ECFA workshop on e+e- Higgs, Electroweak and Top Factories, Chair of the BSM sessions, member of the jury for the poster session, plenary talk: "Searches for LLPs", (9-11 October) Paris, FR
- LHCP 2024: 12th Edition of the Annual Large Hadron Collider Physics conference, Chair of the Outreach and Education sessions, member of the jury for the poster session, (3-7 June) Boston, US
- RECFA visit to Sweden, Organizing committee, talk: "Future Colliders", (16 May) Lund, SE
- Young Nordic Future-Collider day / FCC discussion, Chair of the FCC discussion, talk: "Short status of the FCC project from a Swedish angle", (14 May) Lund, SE
- Celsius-Linnaeus Lectures, Uppsala Celsius symposie-lecturer: "Searches for physics beyond the Standard Model at the high energy frontier", (15 Feb) Uppsala, SE
- 7th FCC Physics Workshop, Talk: "Report from Sweden, Norway, Denmark, Finland, Baltic countries", (29 Jan - 2 Feb) Annecy, FR
- ZPW2024: Particle Physics from LHC to Future Colliders, Invited talk: "The FCC project overview", (8-10 Jan) Zurich, CH
- 2023 ICFA Seminar 2023: 13th ICFA Seminar on Future Perspectives in High-Energy Physics, Swedish representative - invitation only, (27 Nov - 1 Dec) DESY Hamburg, DE
- Electroweak milestones - 50 years of neutral currents, 40 years of W and Z bosons, Invited talk: "A forward look (FCC-ee)", (31 October) CERN, CH
- Second ECFA Workshop on e+e- Higgs/EW/Top Factories, Chair of WG1-SRCH sessions and talk: "LLPs - Long-lived particles", ECR Panel discussion, (11-13 October) Paestum, IT
- Nobel Symposium on Dark Matter - NS 182, Invited local participant, (24-29 August) Rånäs Slott, SE
- The 2023 International Workshop on Circular Electron Positron Collider (European Edition), Chair the Parallel sessions "Physics: BSM", (3-6 July) Edinburgh, UK

- Fysikdagarna 2023**, Talks: "ACCU" and "The Future Circular Collider (FCC) at CERN", (14-16 June) Stockholm, SE
- CHIPP/CHART Workshop on Sustainability in Particle Physics and CHIPP 2023 plenary**, Invited plenary talk: "Physics motivation for future colliders", (14-16 June) Sursee, CH
- FCC Week 2023**, Chair of session: PE&D: Detectors (I), (5-9 June) London, UK
- Blois 2023: 34th Rencontres de Blois on "Particle Physics and Cosmology"**, Invited Plenary talk: "Long lived particles (at colliders and beyond)" and chair of the BSM parallel session Thursday afternoon, (14-19 May) Blois, FR
- HEP2023: 8th International Conference on High Energy Physics in the LHC Era**, Plenary talk: "Overview of Physics results at ATLAS", (9-13 January) Valparaíso, CL
- 2022 **First ECFA workshop on e+e- Higgs/EW/Top Factories**, Abstract selection and indico agenda for the "WG1 - Searches" sessions, (5-7 October) Hamburg, DE
- FCC BSM Physics Programme Workshop**, Organizing committee and chair, (15-16 Sept) CERN, CH
- FCC Week 2022**, Invited talk: "BSM Review and Plans", Introduction and participation in: "FCCIS WP5 Sharpening the FCC Physics Case: Round table discussion", (30 May 2022 - 3 June 2022) Paris, FR
- ECFA HF WG1: 1st Workshop of the WG1-SRCH group**, Chair of the workshop, (25 May) CERN - held virtually, CH
- The 2nd Joint ECFA-NuPECC-ApPEC JENAS-Seminar**, Invited Plenary talk: "Outreach" and panel: "Training, Education, and Outreach", 3-6 May) Madrid, ES
- 2021 **DISCRETE 2020-2021: 7th Symposium on Prospects in the Physics of Discrete Symmetries**, Invited Plenary talk: "The Future Circular Collider (FCC) at CERN", 29 November - 3 December) Bergen, NO
- Partikeldagarna 2021**, Talk: "Report from ACCU", 22-23 November Chalmers - held virtually, SE
- Nordic physics Days 2021**, Chair of session: Elementary particle physics and astroparticle physics 1, Talk: "Long-lived particles at FCC-ee", 4-6 August Uppsala - held virtually, SE
- FCC Week 2021**, Invited Talk: "Long-lived particles at FCC", 28 Jun - 2 Jul CERN - held virtually, CH
- 1st FCC Nordic day**, Chair of the workshop, main organizer, Talks: "Welcome and Information" and "Long-Lived particles at the FCC-ee", 22 March Uppsala - held virtually, SE
- XIX International Workshop on Neutrino Telescopes**, Parallel Talk: "Heavy neutrino searches at the FCC", 18-26 February Padova - held virtually, IT
- XXVII Cracow EPIPHANY Conference on Future of particle physics**, Invited Plenary Talk: "Long-lived particles at future colliders", 7-10 January Cracow - held virtually, PL
- 2020 **Searching for long-lived particles at the LHC: Eighth workshop of the LHC LLP Community**, Organizing committee and chair of sessions: Long-lived particles at future colliders and New ideas 3, 16-20 November, held virtually
- 4th FCC Physics and Experiments Workshop**, Talk: "Long Lived Particles at FCC-ee" and "Beyond the Standard Model physics at FCC: complementarity with astrophysics and non-collider experiments", 10-13 November, held virtually
- ICHEP2020: 40th International Conference on High Energy Physics**, Moderator of the discussion session for Plenary II: High-Energy Cosmic Particles and Dark Matter, 28 Jul - 6 Aug, Prague - held virtually, CZ
- Searching for long-lived particles at the LHC: Seventh workshop of the LHC LLP Community**, Organizing committee and chair of session: "Triggering ideas for ATLAS and CMS and a new result from CMS", 25-27 May, CERN - held virtually, CH
- Spätind 2020: The 26th Nordic Particle Physics Meeting**, Talk: 'To catch a long-lived particle', 2-7 Jan, Skeikampen, NO

- 2019 **Searching for long-lived particles at the LHC: Sixth workshop of the LHC LLP Community**, *Organizing committee and chair of the trigger session*, 27-29 Nov, Ghent, BE
- 2018 **CHARGED2018: Prospects for Charged Higgs Discovery at Colliders**, *Organizing committee and chair of the proceedings*, 25-28 Sep, Uppsala, SE
- IMFP 2018 - XLVI International Meeting on Fundamental Physics**, *Invited Talk: "Top Quark Physics Summary"*, (9-13 April), Salamanca, ES
- Aspen 2018 - The Particle Frontier**, *Plenary Talk: "LHC results on Top Quark Physics"*, (25-31 March), Aspen, CO, US
- Top Quark Physics at the Precision Frontier**, *Chair of the workshop*, (16-19 Jan), Fermilab Batavia, IL, US
- 2017 **Top! Hammertime (a CMS top quark workshop)**, *Chair of the workshop*, (14-15 Nov) CERN, CH
- TOP2017: 10th International Workshop on Top Quark Physics**, *Member of the International Advisory Committee and Chair of the session: Differential Top Quark Pair Production*, (17-22 Sep), Braga, PT
- LHCP 2017: The Fifth Annual Large Hadron Collider Physics conference**, *Chair of the TOP Parallel sessions*, (14-20 May), Shanghai Jiao Tong University, CN
- 2016 **top at 100fb⁻¹**, *Chair of the workshop*, (8-9 Nov) CERN, CH
- TOP2016: 9th International Workshop on Top Quark Physics**, *Chair of the session: Latest Results from ATLAS and CMS*, (19-23 Sep.), Olomuc, CZ
- Third CMS Single Top Workshop**, *Organizing Committee, Scientific Program*, (2-3 Jun), Strasbourg, FR
- APS April 2016: American Physical Society April Meeting 2016**, *Invited Plenary Talk: "Higgs Physics at the LHC"*, (16-19 Apr), Salt Lake City, UT, US
- 2015 **DPF2015: Meeting of the Division of Particles and Fields of the American Physical Society**, *Invited Parallel Talk: "Run-1 Single-top measurements at CMS"*, (4-8 Aug), University of Michigan, Ann Arbor, MI, US
- SM@LHC: Standard Model at LHC**, *Plenary Talk: "LHC results on Spin, Anomalous Couplings, and CP structure"*, (21-24 Apr), Galileo Galilei Institute, Florence, IT
- 2014 **Second CMS Single Top Workshop**, *Scientific Program and Talk: "Lessons learned from Run1 and future prospects"*, (4-5 Dec), Naples, IT
- LHCP 2014: The Second Large Hadron Collider Physics conference**, *Chair of the TOP Parallel sessions*, (2-7 June), New York City Columbia University, US
- 2013 **CMS Single Top Workshop**, *Scientific Program and Closing Talk: "Next steps and summary"*, (19-20 Dec), Naples, IT
- TOP2013: 6th International Workshop on Top Quark Physics**, *Plenary Talk: "Inclusive single top cross section at the LHC"*, (4-19 Sep), Durbach, DE
- 2012 **4th generation and single-top: Workshop on fourth fermion generation and on single-top production**, *Invited Talk: "tW production at CMS"*, (26-28 Mar), Leinsweiler, DE
- Rencontres de Moriond - QCD and High Energy Interactions**, *Plenary Talk: "Single Top Production at $\sqrt{s} = 7\text{ TeV}$ "*, (10-17 Mar), La Thuile, IT
- 2010 **II CPAN days: Segundas Jornadas del CPAN**, *Invited Plenary Talk: "Higgs and SUSY searches in CMS"*, (29-30 Nov), Valencia, ES
- BEACH 2010 IX International Conference on Hyperons, Charm and Beauty Hadrons**, *Plenary Talk: "Higgs Search Prospects at the LHC"*, *Chair of the session: Heavy Flavor Decays and Properties - I*, (21-26 Jun), Perugia, IT
- 2009 **PASCOS 2009: 15th International Symposium on Particles Strings and Cosmology**, *Parallel Talk: "EW symmetry breaking at the LHC"*, (6-10 Jul), Hamburg, DE

- 2008 **ICHEP08: 34th International Conference on High Energy Physics**, Poster: “Discovery Potential for the SM Higgs Boson in the $H \rightarrow WW^* \rightarrow 2l2\nu$ channel at the LHC”, (Jul 29 - Aug 5), Philadelphia, Pennsylvania, US
- 2007 **CHEP07: International Conference on Computing in High Energy and Nuclear Physics**, Poster (co-author): “A software and computing prototype for CMS Muon system alignment”, (2-7 Sep), Victoria BC, CA

Panel participation

- Spätind, Strategy discussion - Panel discussion (link) [2025].
- Second ECFA Workshop on e+e- Higgs/EW/Top Factories, ECR Panel discussion (link) [2023].
- FCC Week 2022, panel: “FCCIS WP5 Sharpening the FCC Physics Case: Round table discussion” (link) [2022].
- The 2nd Joint ECFA-NuPECC-ApPEC JENAS-Seminar, panel: “Training, Education, and Outreach” [2022].
- ATLAS Sweden Day partikeldagarna, panel discussion on career system in our field (link) [2021].
- ICHEP2020: 40th International Conference on High Energy Physics, **Moderator** of the discussion session for Plenary II: High-Energy Cosmic Particles and Dark Matter (link) [2020].
- LHC Soft skills workshop: making the best of working from home (link) [2020].
- 103rd Plenary ECFA meeting at CERN (link) [2018].
- Spanish teacher program at CERN [2017].

Publications

- Author of the ATLAS Collaboration since November 2019, author of the CMS Collaboration papers from 2007 to 2019. Full publication list available [here].
- During my two years as top quark Physics Analysis Group coordinator at the CMS experiment [2016-2018] **53 results were made public**, of which 32 were articles submitted to journals, the complete list of results is available in this [link].
- During my Higgs to WW sub-convenership [2014-2016], 2 papers were submitted to journals: arXiv:1606.01522-JHEP 03 (2017) 032 which was the **500th paper of CMS**, and arXiv:1605.02329-JHEP 09 (2016) 051, as well as seven preliminary results.
- During my single top quark sub-convenership [2012-2013], 7 papers were submitted to journals, and 10 preliminary results made public.

Selection of Personal Publications

- 2025 **Future Circular Collider Feasibility Study Report: Volume 1, Physics, Experiments, Detectors**, arXiv:2505.00272
- The ECFA Higgs/Electroweak/Top Factory Study**, <https://cds.cern.ch/record/2920434/>
- 2024 **Searching for long-lived dark scalars at the FCC-ee**, arXiv:2412.10141, JHEP 06 (2025) 143
- Leptophilic Z' bosons at the FCC-ee: discovery opportunities**, arXiv:2410.12903, Phys. Rev. D 111, 035029 (2025)
- Search for dark mesons decaying to top and bottom quarks in proton-proton collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector**, arXiv:2405.20061, JHEP 09 (2024) 005
- Sparks in the Dark**, arXiv:2404.04138, SciPost Phys. 18, 080 (2025)
- Focus topics for the ECFA study on Higgs / Top / EW factories**, arXiv:2401.07564
- 2023 **FCC Midterm Report - 8. Physics & Experiments**, <https://doi.org/10.17181/mhas5-1f263>
- 2022 **Report of the Topical Group on Physics Beyond the Standard Model at Energy Frontier for Snowmass 2021**, arXiv:2209.13128, Snowmass 2022 process
- The Present and Future Status of Heavy Neutral Leptons**, arXiv:2203.08039, J.Phys.G 50 (2023) 2, 020501
- The Future Circular Collider: a Summary for the US 2021 Snowmass Process**, arXiv:2203.06520, Snowmass 2022 process
- Searches for Long-Lived Particles at the Future FCC-ee**, arXiv:2203.05502, Front. Phys. 10:967881 (2022)

- 2021 **Hunt for rare processes and long-lived particles at FCC-ee**, *arXiv:2106.15459*, Eur. Phys. J. Plus 136, 1056 (2021)
- 2020 **Snowmass2021 - Letter of Interest**, *Searches for Long-Lived Particles at the FCC-ee*
- 2019 **To catch a long-lived particle: hit selection towards a regional hardware track trigger implementation**, *arXiv:1907.09846*, JINST 14 P11009 (2019)
- 2017 **Recent CMS results in top and Higgs physics**, *arXiv:1707.05054*, Modern Physics Letters A, 2, Vol. 32, No. 29 (2017) 1730026
- 2016 **Measurements of the Higgs boson production and decay rates and constraints on its couplings from a combined ATLAS and CMS analysis of the LHC pp collision data at $\sqrt{s} = 7$ and 8 TeV**, *arXiv:1606.02266*, JHEP 1608 (2016) 045
- 2015 **Search for the associated production of a Higgs boson with a single top quark in proton-proton collisions at $\sqrt{s} = 8$ TeV**, *arXiv:1509.08159*, JHEP06(2016)177
- Precise determination of the mass of the Higgs boson and tests of compatibility of its couplings with the standard model predictions using proton collisions at 7 and 8 TeV**, *arXiv:1412.8662*, Eur. Phys. J. C 75 (2015) 212
- Constraints on the spin-parity and anomalous HVV couplings of the Higgs boson in proton collisions at 7 and 8 TeV**, *arXiv:1411.3441*, Phys. Rev. D 92, 012004 (2015)
- 2014 **Observation of the associated production of a single top quark and a W boson in pp collisions at $\sqrt{s} = 8$ TeV**, *arXiv:1401.2942*, Phys. Rev. Lett. 112, 231802 (2014).
- Measurement of Higgs boson production and properties in the WW decay channel with leptonic final states**, *arXiv:1312.1129*, JHEP 01(2014)096
- 2013 **Evidence for associated production of a single top quark and W boson in pp collisions at 7 TeV**, *arXiv:1209.3489*, Phys. Rev. Lett. 110, 022003 (2013)
- Snowmass 2013 Top quark working group report**, *arXiv:1311.2028*
- Observation of a new boson with mass near 125 GeV in pp collisions at $\sqrt{s} = 7$ and 8 TeV**, *arXiv:1303.4571*, JHEP 1306 (2013) 081
- 2012 **Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC**, *arXiv:1207.7235*, Phys.Lett. B 716 (2012) 30-61
- Search for the standard model Higgs boson decaying to a W pair in the fully leptonic final state in pp collisions at $\sqrt{s} = 7$ TeV**, *arXiv:1202.1489*, Phys.Lett. B 710 (2012) 91-113
- 2011 **Measurement of the $t\bar{t}$ Production Cross Section in pp Collisions at 7 TeV in Lepton + Jets Events Using b-quark Jet Identification**, *arXiv:1108.3773*, Phys.Rev. D 84 (2011) 092004
- Measurement of W^+W^- Production and Search for the Higgs Boson in pp Collisions at $\sqrt{s} = 7$ TeV**, *arXiv:1102.5429*, Phys.Lett. B 699 (2011) 25-47

Conference Proceedings

- 2022 **The Future Circular Collider (FCC) at CERN**, *Proceedings for the 7th Symposium on Prospects in the Physics of Discrete Symmetries (DISCRETE 2020-2021)*, *arXiv:2204.10029*
- 2021 **Long-Lived Particles at Future Colliders**, *Proceedings for the XXVII Epiphany Conference*, *arXiv:2102.07597*, Acta Phys. Pol. B 52, 953 (2021)
- 2015 **Run-1 Single top measurements at CMS**, *Proceedings DPF 2015*, *arXiv:1510.05235*
- 2014 **Inclusive single top cross section at the LHC**, *Proceedings TOP 2013*, DOI:10.3204/DESY-PROC-2014-02/16
- 2012 **Single top Production at $\sqrt{s} = 7$ TeV**, *Proceedings Moriond 2012*, *arXiv:1205.2786*
- 2010 **Higgs search prospects at the LHC**, *Proceedings BEACH 2010*, Nucl.Phys.Proc.Suppl. 210-211 (2011) 283-288
- 2008 **Discovery Potential for the SM Higgs Boson in the $H \rightarrow WW^* \rightarrow 2l2\nu$ channel at LHC**, *Proceedings ICHEP 2008*, *arXiv:0810.1468*

Computing projects

- Credit award - Google Cloud Research Credits for machine learning. [2022-2023] - PI
- (NAISS 2023/6-215) NAISS Medium Storage **ATLAS Sweden Grid Storage** [2023-2024] - member
- (SNIC 2022/6-257) SNIC Medium Storage **Search for Dark Mesons in ATLAS** [2022-2023] - PI
- (SNIC 2021/6-82) SNIC Medium Storage **Search for Dark Mesons in ATLAS** [2021-2022] - PI
- (SNIC 2020/22-2) SNIC Medium Storage **Search for Dark Mesons in ATLAS** [2020-2021] - PI
- (HPC2N) SNIC Medium Compute **Particle Physics at the High Energy Frontier** [2019] - member

Selected Outreach Activities

Very active outreach and science communication profile, an extended (though incomplete) list of my activities can be found [\[here\]](#).

Latest: Popular science lecture in the Naturvetarveckan 2025 of the Lundellska skolan: "What do we do at CERN? Exploring the World's Largest Particle Physics Laboratory" (March 3, 2025), Uppsala.

- Member of the IPPOG Collaboration Author List 2024.
- Personal **Twitter** account "*1cRebeca*" used for outreach and science communication. Curated rotating accounts, such as emphlamSciComm (23K+ followers, Sep. 2019) [\[link\]](#).
- **ATLAS Social media engagement officer**, running the official ATLAS experiment Instagram account [\[link\]](#) (2020).
- **Official CERN, ATLAS, and CMS guide** with more than 100 visits underground, including virtual visits for international audiences.
- **CERN contact** of the Expanding your horizons (EYH) event in Geneva: 2013-2015.
- **Local Organizer** of the International Masterclasses by the International Particle Physics Outreach Group (IPPOG) at Uppsala University (2020).
- **Moderator** of the International Masterclasses by the IPPOG (2015-2017).
- CERN speaker for the International Day of Women and Girls in Science, Geneva (CH) (2017-2018).
- Public lectures, Q&A sessions, meet and greet. Interviews in radio, TV, newspapers, magazines.
- Features, latest: LHC Physics at Ten in the CERN official website.
- CERN official videos: Facebook Live from the LHC tunnel [\[link\]](#), February 2018; April Fools' Day video [\[link\]](#) (2016); or official CERN LHC Season 2 videos [\[link\]](#) (2015) among others.
- Different activities within the Spanish, Mexican, and Swedish High School Teacher Programmes at CERN.
- Contributions to the IPPOG website and to different blogs, including a personal blog with CERN pictures, *lonelychairsatcern.tumblr.com* (20K followers).
- Member of the steering panel of Art@CMS [2017-2018]

Other Activities

ATLAS detector operation tasks:

- Shift and Data Quality Leader (2025), Run Control and Trigger (2025), Run Control Shifter (2024), Trigger Shifter (2024), Shift Leader (2024).


CMS detector operation tasks:

- Offline Drift Tube muon chambers (DT) (2008), DT online (2009), DT on-call (2010), Detector Control Safety (DCS) (2010-2011), **Shift Leader** (2012-2017) shifts, and **Run Field Manager** (2015-2017)

Other Trainings:

- Ekonomispelet for Research Leaders (3 October 2023; Uppsala University).
- CERN: Dealing With Media Questions (April 22, 2021; facilitated by Inside Edge Media Training).
- Communication Training (February 2011; CERN)

Membership of Scientific Societies:

-  International Fellow of the Explorers Club (Swedish Chapter) (2016). Board Member, Membership chair [2020-2023].
- Member of the Uppsala Society for Women Scientists.

- Member of ACES: Asociación de Científicos Españoles en Suecia.
- Member of the Swedish Physics Society (Svenska Fysikersamfundet). **Member of the board** [2024-].
- Member of the Royal Spanish Society of Physics (RSEF). **Member of the board of the external section** [2024-].
- Part of the Dark Machines collective.

Not scientific, but still noteworthy:

- Participant in the performance: 'Marina Abramovic MAI presents: Counting the Rice' (2014) Centre d'Art Contemporain Genève in a site-specific structure designed by Daniel Libeskind and produced by Moroso.
- Member of the 'Jurado Joven', 44 edition of the Gijón Film Festival (2006).
- Co-creator and spokesperson of 'MEAL (MEatball AcceLerator)', 2019 Stupid Hackathon Sweden.

August 13, 2025