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Rebeca Gonzalez Suarez

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Scientific bio

I am a physicist of the ATLAS collaboration at the LHC, formerly CMS. I have been involved in Higgs boson physics since the start of my PhD, covering the search for the Higgs boson in WW decays; all the way until the observation of $t\bar{t}H$ in 2018, being the Higgs to WW subgroup convener. In 2011 I started studying the top quark, becoming the single top subgroup convener 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 after obtaining an individual starting grant. While in CMS, I worked extensively in detector operation, in the DT Muon chambers, and the Silicon Strip Tracker.

I was the [Outreach & Education](#) coordinator in ATLAS (2021-2023), and I was involved in the Hardware Track Trigger (HTT) project for the Phase-II Upgrade.

My group searches for a new [dark sector](#) in final states including top quarks (ANA-EXOT-2019-17). Among other ongoing interests machine learning techniques for high energy physics and long-lived particles in future colliders are my top priorities. Concerning the later I convene both the "Direct discovery potential" working group (WG1-SRCH) of the European Committee for Future Accelerators (ECFA) [Higgs Factory Study](#) and the BSM Physics Performance group for the [Future Circular Collider \(FCC\)](#).

Current position

2023- **Associate Professor**, 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

2018- Member of the ATLAS Collaboration at CERN
2006-2018 Member of the CMS Collaboration at CERN

Grants and awards

- 2021 **Carl Tryggers Stiftelse**, *Funding for recruiting a postdoc for 2 years, from the Carl Trygger foundation (CTS 20:1169)*, SE
- 2021 **TUFF-medel 2022**, *Funding for pedagogic development, from the disciplinary domain of science and technology, Uppsala university, 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"*
- 2018 **Vetenskapsrådet Starting Grant**, *Swedish Research Council, Individual (VR 2017-05092) 4 years, Uppsala University, SE*
- 2017 **Future Fellowship Grant**, *Australian Research Council, Individual (FT170100088) 4 years (Declined to move to Uppsala)*, University of Adelaide, AU

Coordination and Leadership positions

- **Outreach Coordinator**. Coordinator the Education and Outreach group of the ATLAS Collaboration. Reporting to ATLAS spokesperson team. [2021-2023]
- **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-]
- **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]

Reviewing/Refereeing/Jury duties

- Member of the jury for the first 'ACES-Margarita Salas Award', given to Professor Mercedes Maroto-Valer [link] [2021]
- **Editorial Boards**. Member of an editorial board 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 a Physics Fellowship panel of the Research Foundation Flanders (FWO). Junior & Senior postdoctoral fellowship applications: W&T2PD - Physics. [2022-]
- **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. In the last three years:
 - GRF Hong Kong, 2022
 - STFC Particle Physics Experiment Grant Round: (STFC PPGP Experiment 2021), 2021.
 - DP Australia, 2021
 - DP20 Australia, 2020
 - UK and Republic of Ireland, Royal Society University Research Fellowship 2020 - University Research Fellowship scheme, 2020
- **Referee**. European Physical Journal C. [2018-]
- Poster session chair. CMS week in Brussels. [2011]

Institutional Responsibilities

- **Elektorsförsamlingen**. Personal Alternate from the Department of Physics and Astronomy at the Electoral Assembly within the Faculty of Science and Technology. Uppsala University [2022]
- **Department Board**. Member of the Board, Department of Physics and Astronomy, Uppsala University [2022-] [link]
- **Seminar organizer**. Weekly seminars in Nuclear and Particle physics at the Physics and Astronomy Department, Uppsala University [2019-2021] [link]

- Member of the Equal Opportunities Group at the Physics and Astronomy Department, Uppsala [2020]

Other responsibilities

- FCC National contact for Sweden [2020-]
- Member of the *Advisory Committee of CERN Users (ACCU)*, representing the Swedish User community [2020-]
- ATLAS Representative at the International Particle Physics Outreach Group (IPPOG) [2022-2023]
- *Coordinator* of the FCC-ee LLP case study. Organizer of the long-lived particles case study within the FCC-ee 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]

Supervision of students

- **PhD supervisor** (Main Supervisor) Olga Sunneborn Gudnadottir, Uppsala University (2019-2023)
- **PhD supervisor** (Co-supervisor) Jonas Steentoft (2020-2024)
- **MSc supervisor**
 - Lovisa Rygaard, Uppsala University (2022) - *Long-Lived Heavy Neutral Leptons at the FCC-ee* [link]
 - Rohini Sengupta, Uppsala University (2021) - *Towards Vertexing Studies of Heavy Neutral Leptons with the Future Circular Collider at CERN* [link].
 - Olga Sunneborn Gudnadottir, Uppsala University (2019) - *Exploring selections across channels in Dark Matter searches with top quarks at the ATLAS experiment of the LHC* [link].
 - Isis Marina Van Parijs, Vrije Universiteit Brussel (2013) - *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* [link].
- **CERN summer student supervisor** Isis Marina Van Parijs (2012) Ivan Shvetsov (2013)
- Supervisor of multiple project students (2018-)

Teaching

University courses:

- 2019- **Modern Physics (5.0c) [1TE078]**, *Examiner and Teacher: lectures, problem solving sessions, exam*, First cycle, Department of Materials Science and Engineering, Uppsala University, SE
- 2021- **Advanced Particle Physics (10.0c) [1FA355]**, *Teacher: lectures, assignments, seminar, exam*, Second cycle, 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:

- 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).

Participation in Thesis Boards

- 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**.
- 2020 **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].
- 2020 **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.
- 2019 **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 person** of the examination committee.
- 2018 **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.
- 2018 **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.
- 2018 **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

- 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

International Conferences and Workshops

- 2023 **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 EIPHANY 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
- Spaatind 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

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.**
 - 6 more papers reflecting analyses I followed up were submitted to journals shortly after.
 - About 35% of the total publications of the top quark group in CMS were submitted.
 - 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.

Analysis Contact, Primary Author, Editor

- 2022 **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

- 2015 **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 $\sqrt{s} = 8\text{TeV}$** , *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)
- Substantial Contribution**
- 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*, Snowmass 2022 process
The Future Circular Collider: a Summary for the US 2021 Snowmass Process, *arXiv:2203.06520*, Snowmass 2022 process
- 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 $\sqrt{s} = 8\text{ TeV}$** , *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
- 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. B716 (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 $\sqrt{s} = 7\text{ TeV}$, *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. D84 (2011) 092004
Measurement of W^+W^- Production and Search for the Higgs Boson in pp Collisions at $\sqrt{s} = 7\text{ TeV}$, *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 $\sqrt{s} = 7\text{ TeV}$** , *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*
- 2007 **A Software and Computing prototype for CMS Muon System alignment**, *Proceedings CHEP 2007*, Journal of Physics: Conference Series 119 (2008) 072008

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.

Selected Outreach Activities

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

Latest: Public lecture, 'The discovery of the Higgs particle', at *CERN: a place for me!* (2023), Ångström laboratory, Uppsala University (SE) (March 2, 2023).

- 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


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)

Panel participation:

- FCC Week 2022, panel: "FCCIS WP5 Sharpening the FCC Physics Case: Round table discussion" [2022]
- The 2nd Joint ECFA-NuPECC-ApPEC JENAS-Seminar, panel: "Training, Education, and Outreach" [2022].
- 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].

Membership of Scientific Societies:

-  International Fellow of the Explorers Club (Swedish Chapter) (2016). **Board Member, Membership chair.**
- 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 Royal Spanish Society of Physics (RSEF).
- 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.

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