Rebeca Gonzalez Suarez - Teaching and Supervision

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Teaching experience

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

2024- **Advanced Physics - Project Course (10.0c) [1FA565]**, *Examiner*, Second cycle, Department of Physics and Astronomy, Uppsala University, SE

2024- **Advanced Physics - Project Course (5.0c) [1FA566]**, *Examiner*, Second cycle, Department of Physics and Astronomy, Uppsala University, SE

I have also participated in:

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

Participation in Schools

- (2024) **PSI Particle Physics Summer School**: From Low to High: Particle Physics at the Frontier. Teacher: The Standard Model and Beyond (4-10 Agust) Zuoz, Switzerland.
- (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, Sweden.
- (2019) **HASCO2019 Summer School**. Teacher: Introduction (21- 26 July) University of Goettingen, Germany.
- (2019) PIER Graduate Week, **Scientific colloquium** "When will the LHC come full Circle?" (23-26 Sep) DESY, Hamburg, Germany.

Formal training in teaching and learning in higher education

- Colloquium for supervisors regarding research ethics in doctoral education (Department of Physics and Astronomy), 22 March 2024, Uppsala University (SE). *(3 hours)*.
- **Hands-on: renew your online teaching**. 2 December 2020, 24 March 2021, Uppsala University (SE). *(6 hours)*.
- **Supervising Students for Degree Projects**. March - April 2019, Uppsala University (SE). *(***2 weeks***)*.
- **Student-centered teaching and learning**. 4 December 2018, Uppsala University (SE). *(3 hours)*.
- **Supervising PhD Students**. September - December 2018, Uppsala University (SE). *(***3 weeks***)*.
- **Academic Teacher Training Course**. September - October 2018, Uppsala University (SE). *(***5 weeks***)*.
- **Supervising student presentations**. 27-29 August 2018, Uppsala University (SE). *(2,5 days)*.

- **Mathematics didactics in the ESO** (*Didáctica de las matemáticas en la ESO*). Fall semester 2003, Universidad de Oviedo (ES). *(6 credits)*.

Pedagogical innovation and development projects

2022 **TUFF-medel 2023**, *Funding for pedagogic development, from the disciplinary domain of science and technology, Uppsala university, SE*, "Student activation and enhanced understanding of complex physics concepts through open lab", co-applicant

2021 **TUFF-medel 2022**, *Funding for pedagogic development, from the disciplinary domain of science and technology, Uppsala university, SE*, "Understanding complex Modern Physics concepts and activating students with demonstrations", 216,000 SEK

Supervision Experience

Supervision of postdoctoral researchers

- Giulia Ripellino (2022-). Giulia is funded by a grant from the Carl Trygger foundation (CTS 20:1169).

Supervision of PhD students

- Axel Gallén (expected 2027) **(Main Supervisor)**
- Olga Sunneborn Gudnadottir (defended 2024) **(Main Supervisor)**
  - 'Of dark mesons and novel methods: A dark sector search in ATLAS data and development of new techniques for challenging final states'
- Christina Dimitriadi (defended 2024) (co-supervisor)
  - 'Double Higgs τrouble: Searches for Higgs boson pairs in the ATLAS experiment and their interpretations'
- Jonas Steentoft (Licentiate, 2022) (co-supervisor)
  - 'Aspects of the ATLAS ITk Inner Tracker development for the high luminosity upgrade of the Large Hadron Collider'

Supervision of Master students

- Eva Mayer (2023)
  - Uppsala University. Co-supervised with Olga Sunneborn Gudnadottir.
  - Thesis Title: *Title* [link].
- Lovisa Rygaard (2022)
  - Uppsala University. Co-supervised with Suchita Kulkarni and Juliette Alimena.
  - Thesis Title: *Long-Lived Heavy Neutral Leptons at the FCC-ee* [link].
- Rohini Sengupta (2021)
  - Uppsala University. Co-supervised with Suchita Kulkarni.
  - Thesis Title: *Towards Vertexing Studies of Heavy Neutral Leptons with the Future Circular Collider at CERN* [link].
- Olga Sunneborn Gudnadottir (2019)
  - Uppsala University.
  - Thesis Title: *Exploring selections across channels in Dark Matter searches with top quarks at the ATLAS experiment of the LHC* [link].
- Isis Marina Van Parijs (2013)
  - Vrije Universitet Brussel
  - Thesis Title: *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]

Master thesis Subject Reader (Ämnesgranskare)

- Daniel Gautam (2023) supervised by Giulia Ripellino

- Magdalena Vande Voorde (2023) supervised by Giulia Ripellino [link]
- Claudia Rafaela de Sousa Goncalves (2022) supervised by Carlos Perez de los Heros
- Nils Eriksson (2022) supervised by Serhat Ordek
- Edvin Eriksson (2020) supervised by Richard Brenner

Supervision of project students

- Nil Tabudlong Jonasson and Kristoffer Franzen (15HP + 15HP) (January 2024) 'Building a Muon Detector'
- Eva Mayer (15 HP) (November 2022) - 'Application of a Boosted Decision Tree to signals and backgrounds of the search for Dark Mesons at theATLAS experiment'
- Lovisa Rygaard and Nils Eriksson (15HP + 15HP) (January 2022) - "Simulation of long-lived Heavy Neutral Leptons and Axion-Like Particles at the FCC-ee"
- Mario Alves Cardoso 5HP (February 2021) - "Implementation of Variational Autoencoder on simulated particle collider data" [link]
- Rohini Sengupta 15HP (January 2021) - "Long-Lived Particles at the FCC-ee" [link] - Project in Applied Physics 15 hp (19/01/21)
- Mario Alves Cardoso 3 HP (June 2020) - Machine Learning Introduction'
- Daniela Romero 3HP (May 2020) - Physics Opportunities of a 100 TeV Proton-Proton Collider
- Olga Sunneborn Gudnadottir 3HP (Jan 2019) - Single Top Physics

Supervision of summer students

I was a **CERN summer student program** supervisor in 2012 (Isis Marina Van Parijs) and co-supervisor in 2013 (Ivan Shvetsov), both projects related to single top physics.

Pedagogical mentorship

I am a member of the **Network for Research Supervisors** in Uppsala University. Uppsala University offers courses in supervision of PhD students for faculty and as a part of these courses there is a study visit to a senior PhD student supervisor to observe a supervision session. I have received the following visits for Supervision Observation:

- Stephan Wagner (October 21, 2020) observed supervision between me and Olga (via Zoom).
- Niklas Wahlström (April 14, 2020) observed supervision between me and Olga (via Zoom).
- Marina Corbella (November 8, 2019) observed supervision between me and Olga.

CERN High school programs

CERN High School Physics Teacher Programme

Guide, lecturer, for the Spanish High School Teacher Programme at CERN and panel member (2014, 2016, 2017).
Guide, lecturer, for the Mexican High School Teacher Programme at CERN (2017).
Guide for the Swedish High School Teacher program at CERN (2011).

Other

Received students for "Forskarbesök - kandidatprogram fysik årskurs 1" (3 October 2024). Lecture: "How the largest particle accelerator in the world goes to the smallest distances in the Universe".

Production of teaching materials and publications

Educational Materials - citeable

- Rodriguez Vera, Ana Maria and Moreno Llacer, Maria and Gonzalez Suarez, Rebeca *"The Higgs Boson - ATLAS Fact Sheet [Spanish]"*, 2022 ATLAS-OUTREACH-2022-025
- Rodriguez Vera, Ana Maria and Gonzalez Suarez, Rebeca and Le Boulicaut, Elise Maria *"Conservation*

Laws - ATLAS Physics Cheat Sheet in Spanish - Leyes de Conservación", 2021 ATLAS-OUTREACH-2021-091

- Rodriguez Vera, Ana Maria and Le Boulicaut, Elise Maria and Gonzalez Suarez, Rebeca *"Standard Model - ATLAS Physics Cheat Sheet in Spanish - El Modelo Estandar"*, 2021 ATLAS-OUTREACH-2021-090
- Rodriguez Vera, Ana Maria and Le Boulicaut, Elise Maria and Gonzalez Suarez, Rebeca *"Feynman Diagrams - ATLAS Physics Cheat Sheet in Spanish - Diagramas de Feynman"*, 2021 ATLAS-OUTREACH-2021-089
- Anthony, Katarina and Mehlhase, Sascha and Gonzalez Suarez, Rebeca and Rodriguez Vera, Ana Maria *"Higgs Boson - ATLAS Fact Sheet"*, 2021 ATLAS-OUTREACH-2021-074
- Rodriguez Vera, Ana Maria and Gonzalez Suarez, Rebeca and Mehlhase, Sascha and Anthony, Katarina *"Software and Computing Infrastructure - ATLAS Fact Sheet"*, 2021 ATLAS-OUTREACH-2021-066
- Rodriguez Vera, Ana Maria and Mehlhase, Sascha and Gonzalez Suarez, Rebeca and Anthony, Katarina *"Trigger and Data Acquisition - ATLAS Fact Sheet"*, 2021 ATLAS-OUTREACH-2021-065
- Rodriguez Vera, Ana Maria and Gonzalez Suarez, Rebeca *"The ATLAS Collaboration - ATLAS Fact Sheet [Spanish]"*, 2021 ATLAS-OUTREACH-2021-064
- Rodriguez Vera, Ana Maria and Gonzalez Suarez, Rebeca *"Calorimeters - ATLAS Fact Sheet [Spanish]'*, 2021 ATLAS-OUTREACH-2021-063

Proceedings

- Velho, Mariana and Goldfarb, Steven and Anthony, Katarina and Mehlhase, Sascha and Gonzalez Suarez, Rebeca and Nellist, Clara and Le Boulicaut, Elise Maria and Rodriguez Vera, Ana Maria *"ATLAS experiment educational printables"*, PoS EPS-HEP2021 (2022) 887 ATL-OREACH-PROC-2021-002
- Goldfarb, Steven and Anthony, Katarina and Gonzalez Suarez, Rebeca and Hutinet, Maxime and Mehlhase, Sascha and Nellist, Clara and Velho, Mariana *"ATLAS public website: Evolution to Drupal 8"*, PoS EPS-HEP2021 (2022) 888 ATL-OREACH-PROC-2022-001