

# Rebeca Gonzalez Suarez - Teaching and Supervision

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## Teaching experience

### University courses

- 2025- **Mekanik (5.0c) [1FA104]**, *Examiner and Teacher: problem solving sessions, exam*, Bachelor's level, Department of Materials Science and Engineering, Uppsala University, SE
- 2019- **Modern Physics (5.0c) [1TE078]**, *Examiner and Teacher: lectures, problem solving sessions, exam*, Bachelor's level, Department of Materials Science and Engineering, Uppsala University, SE
- 2024- **Project in Physics and Astronomy (30.0 c) [1FA193]**, *Examiner*, Master's level, Department of Physics and Astronomy, Uppsala University, SE
- 2024- **Advanced Physics - Project Course (10.0c) [1FA565]**, *Examiner*, Master's level, Department of Physics and Astronomy, Uppsala University, SE
- 2024- **Advanced Physics - Project Course (5.0c) [1FA566]**, *Examiner*, Master's level, Department of Physics and Astronomy, Uppsala University, SE
- 2021-2024 **Advanced Particle Physics (10.0c) [1FA355]**, *Course responsible and Teacher: lectures, assignments, seminar, exam*, Master's 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

## Participation in Schools

- 2025 - 12th KSETA plenary workshop. Invited lecture. 10-12 March, Haus Saron in Wildberg, Germany.
  - Title of the lecture: "The Future Circular Collider (FCC) at CERN"
- 2024 - **PSI Particle Physics Summer School**: From Low to High: Particle Physics at the Frontier. Teacher. 4-10 Agust, Zuoz, Switzerland.
  - Title of the lectures: "The Standard Model and Beyond I " and "The Standard Model and Beyond II"
- 2021 - **COST** Advanced School on Physics of Dark Matter and Hidden Sectors: from Theory to Experiment. **Organizer** and Teacher. 18-21 October, hybrid format - Lund University, Sweden.
  - Title of the lecture: "Non-standard collider signatures: long-lived particles"
  - Extended discussion & tutorials: Collider searches for Dark Matter
- 2019 - PIER Graduate Week, **Scientific colloquium** speaker. 23-26 Sep, DESY, Hamburg, Germany.
  - Title of the lecture: "When will the LHC come full Circle?"
- (2019) **HASCO2019 Summer School**. Teacher. 21- 26 July, University of Goettingen, Germany.
  - Title of the lecture: "Introduction"

## 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  $\tau$  trouble: 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 Universiteit 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 the ATLAS 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.

### Educational coordination roles

#### • Education & Outreach Coordinator.

Coordinator the Education & Outreach group of the ATLAS Collaboration [2021-2023].

Elected position via Collaboration Board vote (1 vote per ATLAS institute).

*Size of the community:* 307 members in the mailing list (atlas-outreach@cern.ch).

### 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.

## Participation/organization of conferences

- TUK 2025 Pedagogical Conference of the Faculty of Science and Technology in Uppsala University (March 17) - participant
- LHCP 2024: 12th Edition of the Annual Large Hadron Collider Physics conference, Organizer and Chair of the Outreach and Education sessions, member of the jury for the poster session (3-7 June) Boston, US.

## 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

## 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". [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).