

# Rebeca Gonzalez Suarez - Teaching and Supervision

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## Formal training in teaching and learning in higher education

- **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).

Additionally, during my undergraduate studies I took a course on teaching physics at high school level. Within this course I had to plan and develop a physics program oriented to final year high-school students:

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

## 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
- 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, 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.

## Pedagogical innovation and development projects

- 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

## Experience as supervisor

### 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

- Olga Sunneborn Gudnadottir (2019-) **main supervisor**, hep and data science, partially funded by the Uppsala Centre for Interdisciplinary Mathematics (CIM)
- Jonas Steentoft (2020-) (co-supervisor)
- Thomas Mathisen (2018-2019) (co-supervisor)

### Supervision of Master students

- 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]

### Supervision of project students

- 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.

## Production of teaching materials and publications

I have contributed to the IPPOG website, e.g. (links below)

- How to build a salad bowl accelerator.
- Activities with liquid nitrogen.
- Build your own cloud chamber.

## 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.

## Other

### Master thesis Subject Reader (Ämnesgranskare)

- 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

### 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).