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## Education and PhD

**2003-2008:** Undergraduate studies: Università di Roma 'Sapienza', Italy, Summa Cum Laude

**2008-2011:** D. Phil. Degree (16/12/2011), University of Oxford, Merton College, UK.

*Supervisor:* Prof. Amanda Cooper-Sarkar.

*Thesis title:* Measurement of the inclusive jet cross section with the ATLAS detector at the LHC.

- *As non-UK students are not eligible to receive financial support from the Science and Technology Funding Council, my PhD position was fully funded by external grants that I obtained in competition from organizations and foundations in the UK, Italy and Sweden (see [this article on the UK newspaper "The Guardian"](#)):*
  - Della Riccia Scholarship, *Fondazione Della Riccia*, Amount: 9.900 EUR.
  - Foundation Main Grant, *British Foundation of Women Graduates*, Amount: 4.000 GBP.
  - Stapley Trust Grant, *Sir Richard Stapley Educational Grant*, Amount: 1.100 GBP.
  - Blanceflor Scholarship, *Foundation BLANCEFLOR Boncompagni-Ludovisi, nee Bildt*, Amount: 15.000 EUR (only 9.000 EUR accepted thanks to concurrent scholarships).
  - Charterhouse European Bursary, *University of Oxford*, Amount: 5.000 GBP.
  - Scatcherd European Scholarship, *University of Oxford*, Amount: 4.000 GBP.
  - Rotary Ambassadorial Scholarship, *Rotary Foundation*, Amount: 25.000 USD.
- *My PhD thesis was nominated as an outstanding contribution by the University of Oxford, and published in the [Springer Theses series](#) and its results are described in one of the 20 most cited LHC papers.*

## Postdoctoral experience (Previous positions)

**2011-2015:** Senior research and teaching assistant (Maître-assistante), University of Geneva, CH

## Current positions

**2019-present:** Senior University Lecturer (Lektor), Lund University.

**Reader (docent)** since 30/08/2017.

**2015-2019:** Associate Senior University Lecturer (Biträdande lektor), Lund University.

## Individual funding obtained in competition

**2019-2023:** VR Project Grant

*Research project title:* Real-time Strategies and Precision Searches for Dark Sector Particles.

*Yearly budget:* 1100 kSEK/year, covering part of my salary and funding a PhD student

**2016-2021:** ERC Starting Grant

*Research project title:* Discovery strategies for Dark Matter and new phenomena in hadronic signatures with the ATLAS detector at the LHC.

*Total budget:* 1.269.000 EUR, funding one post-doctoral researcher and two PhD students, equipment

**2015-2019:** VR Project Grant for Young Researchers

*Research project title:* Searches for Dark Matter and New Phenomena with the ATLAS detector at

the Large Hadron Collider and beyond  
*Yearly budget:* 800 kSEK/year, funding my salary

### Collaborative and synergistic funding obtained in competition

**2020-2026:** Helmholtz International Research Graduate school  
*School title and topic:* HELIOS school on intelligent instrumentation for present and future physics facilities (CERN, MAX, ESS, xFEL)  
*Partners:* Lund University, University of Hamburg, DESY  
*Role:* co-spokesperson and co-coordinator  
*Support:* 26 PhD students (including in-kind contributions)

**2020-2025:** Knut and Alice Wallenberg Foundation project grant  
*Research proposal title:* Light Dark Matter  
*Partners:* Lund University, Chalmers, University of Stockholm  
*Role:* co-PI  
*Support:* 2 PhD students and 2 postdocs, equipment

**2016-2020:** MSCA International Training Network  
*School title and topic:* INSIGHTS, International Training Network of Statistics for High Energy Physics and Society  
*Role:* co-PI, equal opportunities and ethics officer of the network  
*Support:* 15 PhD students (one at Lund University)

### Prizes, fellowships and awards

**2018:** Sten Von Friesens Pris, Royal Physiographic Society in Lund  
*Motivation:* for the advancement of measurement methods in particle physics and for the ambition of strongly linking particle physics and other disciplines

**2009:** Perkins prize, Oxford Particle Physics  
*Motivation:* Best performance for 1st year PhD student in Oxford particle physics.

**2003-2008:** Full scholarship, Italian National Federation of Holders of the Order of Merit for Labour.  
*Motivation:* Academic merit

**2008:** Scholarship of Istituto Nazionale of Fisica Nucleare scholarship  
*Motivation:* Best performance for final-year experimental particle physics students

### Assignments as reviewer of national and international grants:

**2020-:** Evaluator for the Merit Reviews of the Israel Science Foundation (ISF)

**2019-:** Panel member for the annual merit-review and comparative-based research program for the US Department of Energy.

**2018-:** Remote expert reviewer for ERC Grants

### Journal review and editorial assignments

**Since 2016** Reviewer for the European Journal of High Energy Physics (JHEP)

**Since 2018** Reviewer for the European Journal of Physics C (EPJC)

**Since 2020** Associate Editor of Big Data and AI in High Energy Physics (Frontiers)

## Membership of scientific societies

**2020-:** Chair of the Swedish Particle Physics and Astrophysics Board, Swedish Physical Society

**2017-:** Elected member of the Swedish Particle Physics and Astrophysics Board.

## Responsibilities and appointments leading groups in international collaborations

**2019-2021:** Convenor of the Dark Matter at colliders topical group of Snowmass 2021

*Appointed by:* Energy Frontier Convenors for the Snowmass process

*Role description:* identify, lead and develop a vision for the future of the high energy physics community in the United States, in terms of dark matter searches at colliders, in synergy with astroparticle physics and non-collider physics.

*Group/community size:* 100 members (from mailing list)

**2018-2019:** Convenor of the Dark Matter at colliders topical group towards the update of the European Strategy of Particle Physics

*Appointed by:* Members of the Physics Planning Group for the European Strategy Update

*Role description:* identify, lead and develop a vision for dark matter searches at colliders as input to the update to the European Strategy of Particle Physics, in synergy with astroparticle physics and non-collider physics.

*Group/community size:* N/A

**2020-present:** Coordinator of the High Energy Physics Software Foundation (HSF)

*Appointed by:* HSF coordination group

*Group description:* The HEP Software Foundation facilitates cooperation and common efforts in High Energy Physics software and computing internationally.

*Group/community size:* 250 members (from mailing list and workshops)

**2020-present:** Convenor of the HSF Software Triggers and Reconstruction Working Group

*Appointed by:* HSF coordination group

*Group description:* Within the HSF, this working group provides a forum and guidance for common efforts on real-time data analysis selection and software that brings the raw data to a format that is usable for physics analysis (reconstruction).

*Group/community size:* 70 members (from mailing list)

**2016-2018:** Convenor of the LHC Dark Matter Working Group

*Appointed by:* ATLAS Collaboration and LHC Physics Center (LPCC)

*Group description:* The LHC Dark Matter Working Group (LHC DM WG) brings together theorists and experimentalists to define guidelines and recommendations for the benchmark models, interpretation, and characterisation necessary for broad and systematic searches for dark matter at the LHC.

*Group/community size:* 250 members (from mailing list)

**2014-2016:** Convenor of the LHC Dark Matter Working Group

*Appointed by:* ATLAS Collaboration

*Group description:* This Forum was created to develop and harmonize the dark matter benchmarks for both the ATLAS and CMS Collaborations for LHC analyses.

*Group/community size:* 250 members (from mailing list)

**2014-2016:** Convenor of ATLAS Astroparticle Forum

*Appointed by:* ATLAS Collaboration

*Group description:* This forum pools the interests and the expertise of the entire collaboration on astroparticle physics related issues, in order to enhance the contribution of ATLAS searches and measurements to the open problems in cosmology and astrophysics, and perform joint measurements with other experiments towards answers to those problems.

*Group/community size:* 90 members (from mailing list)

**2012-2014:** Convenor of the Jets and Exotics phenomena (now Jets and Dark Matter) group

*Appointed by:* ATLAS Collaboration

*Group description:* This subgroup covers the ATLAS searches for dark matter and Beyond the Standard Model physics in hadronic final states.

*Group/community size:* 70 members

### **Analysis contact, paper / conference note editor, editorial board chair and liaison roles in the ATLAS collaboration**

The *paper editor* has the full overview of the analysis and writes the paper that will be submitted to the journal. They also take care of the internal review steps (as the paper is thoroughly peer-reviewed by the collaboration before submitting to the journal) and of the peer-review comments from the journal.

**2018:** Paper editor of “Search for low-mass resonances decaying into two jets and produced in association with a photon using pp collisions at  $\sqrt{s} = 13$  TeV with the ATLAS detector” with 2016 and 2017 data (reference 2 in the Publication list)

**2016:** Paper editor of “Search for low-mass dijet resonances using trigger-level jets with the ATLAS detector in pp collisions at  $\sqrt{s}=13$  TeV” with 2016 data (reference 1 in the Publication list)

**2016:** Conference note editor of “Search for low mass di-jet resonances in ISR + dijet events at 13 TeV” with 2016 data, prepared for the LHCP conference

**2016:** Conference note editor of “Search for low-mass dijet resonances with Trigger-Level Analysis” with 2015 data, prepared for the LHCP conference

**2014:** Paper editor of “Search for new phenomena in the dijet mass distribution using  $\sqrt{s}$  collision data at  $\sqrt{s}=8$  TeV with the ATLAS detector” (reference 6 in the Publication list)

The *Analysis contact* organizes and leads the team in the day-to-day analysis tasks. This is necessary in large collaborations since the analysis teams are formed by members from different institutes all over the world, and have different levels of expertise.

**2014:** Analysis contact of “Search for new phenomena in the dijet mass distribution using  $\sqrt{s}$  collision data at  $\sqrt{s}=8$  TeV with the ATLAS detector”

The *editorial board chair/member* is part of a committee that is responsible for internal cross-checks and peer-review within the collaboration before an analysis paper is submitted to a journal. Here I will only list appointments as a chair.

**2017:** Editorial Board Chair for “Search for large missing transverse momentum in association with one top-quark in proton-proton collisions at  $\sqrt{s}=13$  TeV with the ATLAS detector”

**2015:** Editorial Board Chair for “Measurement of the inclusive jet cross-sections in proton-proton collisions at  $\sqrt{s}= 8$  TeV with the ATLAS detector”

**2013:** Editorial Board Chair for “Measurement of three-jet production cross-sections in pp collisions at 7 TeV centre-of-mass energy using the ATLAS detector”

The *liaison* is a scientist part of the ATLAS collaboration who is active in two working groups simultaneously (one for physics analysis, and the other with a technical focus) and has the responsibility of communicating important information between the two groups, e.g. when the software needs to change for the physics analysis, and answering technical questions.

**2020-:** Liaison between the real-time data analysis selection group in ATLAS (trigger group) and the working group that searches for new physics phenomena in ATLAS (Exotics group).

### Organization of selected scientific meetings

**2020:** Session convenor of the “Dark Matter” session at the ICHEP conference, originally in Prague but then moved online due to COVID-19.

**2020:** Programme convenor of the “Dark Matter Detection” session at the LHCP conference, originally in Paris but then moved online due to COVID-19.

**2020:** Main organizer of the HEP Software Foundation / WLCG workshop in Lund (expected 250 participants, but then postponed to 2021 due to COVID-19).

**2019:** Overall programme committee chair of 23rd international conference on Computing for High Energy Physics (CHEP), Australia (500 participants).

**2018:** Main organizer of the Swedish particle physics community conference (Partikeldagarna) in Lund (80 participants).

**2016:** Scientific organizer committee of the Dark Matter workshop during KAW foundation’s 100th anniversary symposium “Big Questions in Astrophysics” (36 participants)

**2015, 2017:** Chair of the “Dark Matter” and “Higgs and Beyond the Standard Model physics” sessions at the European Physical Society Conferences, Austria and Italy (>300 participants)

**2016:** Member of the local organizing committee for the Large Hadron Collider Physics Conference (LHCP) in Lund (350 pp).

**2014:** Chair of the BSM and QCD sessions at the 3<sup>rd</sup>, 4<sup>th</sup> and 6<sup>th</sup> editions of the LHCP conference (US, Sweden, Italy).

**2014-:** Session chair and organizer of DM@LHC conferences in Netherlands, UK and Germany (100 pp)

### Selected invited talks and seminars

**2020:** [\*Dark Matter at colliders and synergies with other experiments\*](#), MIT Colloquium (USA)

**2019:** [\*Dark Matter searches at accelerators\*](#), Next Frontiers in Dark Matter, Galileo Galilei Institute (Italy)

**2019:** [\*Connections between DM and long-lived particle \(LLP\) signatures\*](#), LLP Workshop (Belgium)

**2019:** [\*Dark matter at future hadron colliders\*](#), Dark Matter @ LHC (USA);

**2019:** [Experimental DM at colliders](#) (+ panel discussions), Open Symposium, European Strategy Update (Spain);

**2019:** [Synergies between astroparticle, particle and nuclear physics](#), EPS-HEP (Belgium)

**2019:** [Dark Matter](#), APPEC-NuPECC-ECFA JENAS workshop (France)

**2019:** [Real-time analysis](#), HEP Software Foundation workshop before the CHEP conference (Australia)

**2018:** [Hunt for Dark matter at the LHC](#), KVA/JSPS meeting “New Windows to the Universe” (Sweden)

**2017:** [Real-time decisions at LHC experiments](#), Real-time decision-making research program, Simons Institute of Computing (US)

**2019:** [DESY Colloquium](#) on “Making the most of the data” (DESY Hamburg and DESY Zeuthen)

**2014-present:** Invited seminars on dark matter, physics beyond the Standard Model, trigger and jets in universities and labs in Sweden, France, Germany, UK, US ([full list on website](#)).

### Supervision of postdoctoral fellows, graduate and undergraduate students

Main supervisor of **two postdoctoral fellows**:

- **2016-2019:** William Kalderon, currently postdoctoral fellow at Brookhaven National Lab, and current coordinator of the ATLAS real-time data selection system
- **2016-2021:** Jannik Geisen

Main supervisor of **3 PhD students** and one **licentiate student** (Lund University)

- **2020-2024:** Per Alexander Ekman
- **2016-2020:** Eric Corrigan
- **2016-2020:** Eva Hansen
- **2015-2017:** Edgar Kellermann (currently working in industry)

Main supervisor of **7 Master’s students** and **12 Bachelor’s students** (Lund University)

- Supervised theses can be found [on my website](#).
- Students are now mostly pursuing PhDs in experimental or theoretical physics and I continue to mentor them.

Main supervisor of **1 Google Summer of Code computer science student** (Google/HSF)

Main supervisor of **13 CERN summer students** (CERN)

**Co-supervisor of 5 PhD students** (Lund University / University of Geneva).

### Teaching, mentoring, and course development activities

**2019-:** Steering group member for the [COMPUTE research school](#) in the LU Science/Engineering/Medicine Faculties, responsible for alumni network.



**2019:** Invited lecturer for the CERN/Fermilab Summer School (advanced international graduate school). Topic: Beyond the Standard Model physics. [Slides & recordings](#).

**2015-:** Course responsible for [Particle Physics, Cosmology and Accelerators](#) (FYSC14), compulsory course for Bachelor's Degree in Physics, Lund University.

**2016-:** Co-teacher of graduate level course on reproducible analysis using [Jupyter notebooks](#), COMPUTE graduate school, Faculties of Science, Engineering and Medicine, Lund University

**2016-:** Co-teacher of Advanced Particle Physics course lab using [ATLAS Open Data](#) (described in the [Proceedings of LHCP2018](#)), Master's level course in Particle Physics, Lund University

**2011-2014:** Teaching Assistant, *Physique Générale B* (*General Physics course for biologists*), Bachelor's Degree in Physics, University of Geneva.

**2011-2014:** Teaching Assistant, *Méthodes informatiques pour physiciens* (*C++ and numerical methods course for physicists*), Bachelor's Degree in Physics, University of Geneva.

**2012-present:** Teacher and Lund University contact at the [International Hadron Collider Summer School](#), Goettingen. Topics taught: ROOT, Quantum Chromodynamics and jets. [Promotional video](#) (2016).

### Most recent invited general-level articles and interviews

**2020:** [Interview on the European Astroparticle Physics community \(APPEC\) website](#) regarding the iDMEU initiative for joint dark matter studies in Europe.

**2019:** [ATLAS Feature Article on Dark Matter](#) co-authored with D. Tovey, also being prepared as a Scholarpedia article to appear in 2020.

**2019:** [Dark Matter Day interview](#) for the online newsletter of the National Institute of Astrophysics (in Italian)

**2019:** Articles on the *Vision on astroparticle, particle and nuclear physics synergies* at the European level, for the [CERN EP Newsletter](#) and for the [ECFA Newsletter](#)

**2018:** Article on the CERN Courier about [Trigger level searches for low-mass dijet resonances](#),

**2018:** [Press release](#). from Lund university on DARKJETS and its team.

**2018:** [Press release](#) from Lund University on outreach activities.

### Most recent synergistic and outreach activities:

**2017-:** Coordinator of the [SMARTHEP](#) network, connecting the fields of High Energy Physics (HEP) and Data Science, especially in relation to the challenges of processing large datasets using real-time analysis. SMARTHEP is a consortium formed by academic and industrial partners on scientific, technological, and entrepreneurship aspects of both HEP and Data Science and we organize yearly seminars/workshops (e.g. the 2-week [Institute Pascal workshop](#) on Real-time analysis, in Paris in 2019)

**2018:** Invited with other 15 Lund junior faculty to the [LMK Foundation](#) Idea Forum. Led to the proposal of the now-funded interdisciplinary [Pufendorf Institute](#) Advanced Study Group on real-time analysis and open data with the faculties of Physics, Social Sciences, Law, Engineering. The group's activities can be found [on the website](#).

**2016-:** Lund University responsible for the IPPOG Masterclasses in Particle Physics. In 2018 I started hosting the [Masterclasses for the UN International Day of Women and Girls in Science](#), (open to all genders).