

# Experimental Physicist (Particle Physics)

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Spoken languages: Romanian, English, French

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[ATLAS](#) (CERN) member since Sept. 2010

## Research experience (*Teaching and research titles in Romania are described [here](#)*)

- Since Sept. 2010 Second degree scientific researcher (since Sept. 2019)  
Department of Elementary Particles Physics (DFPE) at Horia Hulubei National  
Institute for R&D in Physics and Nuclear Engineering ([IFIN-HH](#)), Bucharest, Romania
- Feb. 2020 – Senior Research Fellow at CERN, [ATLAS](#) experiment  
Mar. 2022 Fellowship Programme: Theoretical & Experimental Physics, [AFC-2019-2/RES](#)  
European Organization for Nuclear Research, Geneva, Switzerland  
*Location: CERN 100%*
- Dec. 2015 – Post-doctoral researcher, ATLAS experiment  
Nov. 2019 [Université de Montréal](#), Physics Department, Montreal, Canada  
*Location: CERN 30%, Montreal 70%*
- Sept. 2012 – PhD in Particle Physics awarded jointly by  
Oct. 2015 [Aix-Marseille Université, Marseilles](#), France and [Universitatea Bucuresti](#), Bucharest, Romania  
Center for Particle Physics of Marseilles ([CPPM](#), France) and IFIN-HH (Romania)  
Supervisors : Pascal Pralavorio ([pralavop@cern.ch](mailto:pralavop@cern.ch)) and Calin Alexa ([calexa@cern.ch](mailto:calexa@cern.ch))  
Qualification : *Très honorable avec félicitations*  
*Location: CERN 25%, Bucharest 25%, Marseilles 50%*
- Sept. 2006 – Bachelor (4 years) and master (2 years) degrees in Physics  
June 2012 Universitatea Bucuresti, Bucharest, Romania  
*Search for new physics in events with same-sign leptons and missing energy with ATLAS at LHC*  
CERN-THESIS-2015-163, CPPM-T-2015-06, <https://cds.cern.ch/record/2060995>

## Grants / Awards

- Institut de valorisation des donnees ([IVADO](#)) grant, 185000 \$CAD, *Machine learning for the analysis of the Large Hadron Collider Data at CERN* ([link](#)), co-applicant, Montreal, Canada (Winter 2017 – Winter 2019)
- *ED352 Doctoral school thesis award*, attributed by École Doctorale Physique et Sciences de la Matière, Marseille, France (Apr. 2016)
- PhD grant from the French government for my Romania-France joint PhD, attributed by the French embassy in Bucharest and Institut francais de Roumanie, covering a 12 months stay in France, distributed over three years (Fall 2012 – Fall 2015)
- *2014 Serban Titeica IFIN-HH award* for remarkable scientific contributions of young researchers (Dec. 2014)
- Yearly grants attributed by the University of Bucharest, Romania, for outstanding academic performance (over the period Fall 2006 - Fall 2015)



# Leadership roles in ATLAS

Details on these responsibilities in ATLAS are given in the following documents: [hep-ex:arXiv:2005.06989](#), [ATL-COM-CBPOLICY-2019-030](#), [ATL-GEN-INT-2015-001](#)

- **(Ongoing)** Convener of Clustering and Tracking in Dense Environments (CTIDE) subgroup (Oct. 2023–Sept. 2025),  $\approx 80$  members. This subgroup is hosted in the Tracking group, and my responsibility is to oversee the ongoing activity: tracking reconstruction in the jet core, impact parameters resolution calibrations,  $dE/dx$  calibration, and the study of fake tracks in the jet core. Once the final results are obtained and validated, they are released for use by the entire ATLAS collaboration.
- Coordinator of the reprocessing effort in the Data Preparation group (Oct. 2021–Sept. 2023),  $\approx 370$  members. I was in charge of all reprocessing tasks, and my responsibilities also included ensuring the proper progress of testing and reprocessing, serving as the key liaison between the various areas providing input to reprocessing and the ATLAS Distributed Computing (ADC) operations team. I was the primary contact for the ADC operations team regarding all reprocessing-related issues.
- Convener of the Strong Production subgroup (Apr. 2020–Sep. 2021),  $\approx 100$  members. This subgroup of the Supersymmetry (SUSY) working group oversees searches for strongly produced supersymmetric particles (gluinos and squarks of all generations). During my mandate, the group covered nineteen inclusive Run 2 searches across different final states. Nine searches performed with the full LHC Run 2 data were published, and several were very close to the “submission to the journal” stage. Quite interesting: participation in the LHC Run 3 SUSY physics programme preparation.
- Convener of the Inclusive Squark/Gluino Production subgroup (Oct. 2019–Mar. 2020), SUSY working group. The subgroup covered eight inclusive Run 2 searches for gluinos and squarks (excluding third-generation squarks) across different final states.
- Convener of Isolation and Fake Forum (IFF, Aug. 2017–Dec. 2019),  $\approx 150$  members. This group addresses common issues related to lepton/photon isolation and fake/non-prompt lepton backgrounds, and proposes common strategies for the physics analysis (PA) groups. As coordinator, one crucial (and challenging) role was to improve collaboration between this combined performance group and the PA groups, and to bring more people to work in IFF. During my mandate, the Run 2 (release 21) recommendations for electron isolation efficiency calibration – and for the first time, photon isolation efficiency calibration – were released to all PA groups in time for the Fall 2018 publications. These recommendations were used until Winter 2021 for electrons and continued to be used for photons in 2022 and 2023. I also gathered a small team to develop a state-of-the-art tool that collects the best methods for estimating the fake/non-prompt background, designed for use by the PA groups. The [JINST 18 \(2023\) 11, T11004](#) paper describing these tools was also prepared. It is the first ATLAS paper to present and describe the methods used by the collaboration to estimate the fake/non-prompt lepton background and the challenges encountered with representative measurements. The paper also discusses the advantages and limitations of each method and provides recommendations for their usage.
- **(Ongoing)** Analysis contact for the Run 2 search for heavy neutral leptons in the EXOTICS group (since Dec. 2023). The objective is to search for heavy neutrinos that promptly decay into SM particles, in final states with either two same-sign leptons or three leptons.
- **(Ongoing)** Analysis contact for the Run 2 + Run 3 BSM charged Higgs boson ( $H^{\pm\pm}$ ,  $H^{\pm}$ ) analysis in the Higgs and Diboson Searches ATLAS group (since July 2022). The objective is to search for doubly and singly charged Higgs bosons predicted by the Type-II Seesaw Model, in final states with leptons, jets, and small missing transverse energy.
- **(Ongoing)** Analysis contact for the same-sign / three light leptons (SS/3Lep) analysis in the SUSY group (May 2016–Nov. 2019, Nov. 2020–Feb. 2024, again starting in Nov. 2024). The objective is to search for new physics, particularly SUSY, in final states with either two light leptons of the same electric charge (SS) or three light leptons (3Lep) accompanied by ( $b$ -) jets. These results were often among the first to be published by the ATLAS group, just in time for the most important physics conferences.
- Electron/Photon performance group liaison with the SUSY group (Apr. 2016–Mar. 2021). During the Feb. 2019–Oct. 2019 period, I was also the IFF group liaison with the SUSY group. The main



objective was to communicate the needs of physics analyses to this performance group and ensure that its recommendations were followed. When needed, I also provided feedback on how to implement these recommendations in analysis frameworks or within the electron/photon performance group packages.

- Coordinator of the review group for methods estimating the fake/non-prompt lepton background in the SUSY group (May 2016–Apr. 2017). The objective was to provide a common software tool and propose recommendations for fake/non-prompt lepton background estimation, validation, and systematic uncertainties, to be widely used in the SUSY group. The tools and recommendations proposed by this group were documented in an ATLAS internal note ([ATL-COM-PHYS-2017-469](#)).

## Other activities in ATLAS

### Data analysis:

- **(Ongoing)** Search for low-mass right-handed Majorana neutrinos, usually referred to as heavy neutral leptons (HNL), in decays of  $W$  bosons (since Summer 2022). The HNLs are predicted by the Type-I Seesaw mechanism. Only prompt HNL decays via a virtual  $W$  boson into a final state with two charged leptons and a neutrino are considered. The decay of the virtual  $W$  boson is not constrained by the mixing of the HNL, so the three leptons can all be of the same flavour or of two different flavours. In the analysis, only the latter case is considered, as it is easier to distinguish from SM processes. When lepton number is (not) conserved, the signal final state consists of two leptons of (same) opposite electric charge and same flavour, along with a third lepton of the same electric charge as the leading lepton from the  $W$  bosons, but of different flavour. Only signal points with an HNL mass below the  $W$  boson mass ( $5 < m_{\text{HNL}} < 50$  GeV) are used. Thus, the considered experimental final state has very low missing transverse energy, originating from SM neutrinos, and consists of two same-sign leptons of the same flavour, plus a third lepton of opposite charge and different flavour.

I am coordinating the Run 2 analysis and taking a leading role, actively contributing to all aspects of the work. I co-maintain the frameworks used to process the data, optimize event and object selections, and define validation, control, and signal regions. I am also responsible for the detector background estimation and its validation. In addition, I serve as the editor of both the ATLAS internal note and the corresponding paper documenting the analysis results. These days, the paper is close to journal submission.

- Member of the team that performed the Run 2 search for BSM charged Higgs bosons ( $H^{\pm\pm}$ ,  $H^\pm$ ), which are predicted by a type-II seesaw model (Spring 2020 – Summer 2021). The  $H^{\pm\pm}$  and  $H^\pm$  bosons decay to  $W^\pm Z^0$  or  $W^\pm W^\pm$ , and the considered experimental signatures involve same-sign light leptons, three- or four-light-lepton signatures, missing transverse energy, and jets. I made significant contributions to the analysis strategy and documentation, leading the analysis through various ATLAS approval processes. I was also in charge of the MC-based method employed to cross-check the electron charge flip and fake/non-prompt lepton background estimations. I was the main [J. High Energy Phys. 06 \(2021\) 146](#) paper editor.

**(Ongoing)** Since Summer 2022 I am involved in the Run 2 + Run 3 analysis preparation. The neutral BSM Higgs boson production channel will be added, and the final states will also include the one-lepton signature. During this period, a paper on the scalar sector of the Type-II Seesaw Model and its LHC phenomenology was published in [arxiv:2410.14830](#) (accepted by JHEP).

- SS/3Lep SUSY analysis, targeting strong and electroweak production of SUSY particles (since Spring 2012). Over time, we have considered both SUSY R-parity-violating (RPV) and R-parity-conserving (RPC) scenarios. Always taking a leading role, I contributed to all major aspects of the analysis: from the optimization of object definitions and event selection, validation/control and signal regions, to the development and validation of data-based detector background estimates, as well as the statistical interpretation of the observations in terms of exclusion limits. As the analysis contact, I frequently proposed the publication strategy and organized and coordinated team efforts. Several conference notes and [six](#) papers covering only the SS/3Lep SUSY analysis have been published since 2012. The defined signal regions and background estimates were often incorporated into SUSY group “summary” papers. I was also involved in several spin-off studies relating the analysis to detector performance and investigating complementarities with closely related analyses, most of which were documented in ATLAS internal notes.



(**Ongoing**) We are currently preparing the Run 3 search with same-sign / three-lepton final states, focusing on strong SUSY production.

- Member of the multi- $b$ -jets SUSY analysis team (Spring 2016–Summer 2022). This analysis searches for new physics, particularly strong production RPC SUSY, in final states with zero or one light lepton and at least three  $b$ -jets. Leveraging my expertise in background studies, I introduced new ideas for lepton-jet overlap removal and lepton definition. Several conference notes and [three](#) papers were published using Run 2 data.
- Member of the RPV multi-lepton SUSY analysis team (Spring 2020 – Summer 2021). This analysis searches for RPV SUSY particles produced via electroweak or strong interactions, focusing on signatures involving one or multiple light leptons and a large number of ( $b$ -) jets. This search represents the first LHC result to achieve sensitivity to electroweak production of SUSY particles that promptly decay into quarks, as predicted in baryon-number-violating RPV models. I was involved in MC signal sample generation, object and event selection, fake lepton background studies, and same-sign lepton signal region optimization. I was also one of the two [Eur. Phys. J. C 81 \(2021\) 1023](#) paper editors.
- Prospects for constraints on the top Yukawa coupling in the second stage of LHC exploitation (Run 2), using signal regions targeting  $t\bar{t}H$  processes and two same-charge light lepton final states. These studies were conducted (in 2014) using MC simulation and were documented in [ATL-COM-PHYS-2015-479](#), an ATLAS internal document.

## Performance studies:

- Performance studies for tracks in the core of jets (Spring 2016 – Summer 2019, Spring 2022, and again since Spring 2023). My first responsibility in the Clustering and Tracking in Dense Environments subgroup was to develop a method to measure, for the first time, the rate of fake tracks inside jets, and further assess – again for the first time – uncertainties in the modeling of the rate of reconstructing fake tracks passing a certain selection. These results were published in [ATL-PHYS-PUB-2017-016](#). In Spring – Summer 2023, I worked to obtain the first uncertainties in the modeling of fake tracks using Run 2 LHC data and MC simulation, both processed with the new ATLAS software release that will be used for Run 3 data taking. A paper documenting (also) these results is currently under preparation. Measurements using each Run 3 data-taking year began in late 2023.  
(**Ongoing**) I am currently working on further improving the framework used to perform the measurements and refining the method to provide more precise modeling uncertainties for Run 3. This is crucial, as dedicated measurements of fake track modeling in dense environments are required for each data-taking period, given their dependence on data-taking conditions and software.
- A precise calibration of the energy measurement of photons and electrons plays a crucial role in various precision measurements carried out in ATLAS, such as Higgs boson mass and coupling measurements in the di-photon channel, as well as the precise measurement of the  $W$  boson mass. One of the key inputs to the energy regression algorithm is an estimate of the energy lost by electrons and photons when interacting with passive detector volumes before reaching the calorimeter (e.g., the inner detector, cryostat walls...). This estimate is provided by the presampler, an active layer of liquid argon positioned in front of the electromagnetic calorimeters.  
During the Winter 2020 – Summer 2021 period, I focused on the in-situ calibration of the presampler energy scale using muons from  $W$  or  $Z$  boson decays recorded in LHC low-pileup Run 2 data. The results were documented in [JINST 19 \(2024\) 02, P02009](#) and were used for the precision Run 2 recommendations for electron/photon energy calibration. These results were also used for the  $H \rightarrow \gamma\gamma$  mass measurement with Run 2 LHC data, published in [Phys. Lett. B 847 \(2023\) 138315](#).  
Until Spring 2022, I worked on a complementary measurement using electrons to assess whether systematic uncertainties could be reduced and to cross-check the results obtained with muons; this effort was carried out in the context of the preliminary Run 3 recommendations for electron/photon energy calibration.
- Calibration of photon isolation efficiency (Spring 2018 – Autumn 2019). I was responsible for combining photon isolation correction factors obtained from independent measurements conducted with radiative  $Z$  decays and inclusive-photon events. Additionally, I led the *track-only* photon isolation measurements using inclusive-photon events in Spring 2018 and again in Summer 2019. The results were documented in [JINST 14 \(2019\) 12, P12006](#).

- Electron reconstruction and identification (Fall 2012, for one year) and isolation (Spring 2018, for half a year) efficiency measurements with the ATLAS data, using  $Z \rightarrow e^+e^-$  events. I was in charge of performing these measurements and providing correction factors for MC simulation (and related uncertainties) to the ATLAS collaboration. In 2018 and 2019, I was also leading the effort to understand the performance, in terms of signal efficiency and background rejection, of the electron isolation working points used by the physics analysis groups, and improve/select their definitions. The results were documented in [ATLAS-CONF-2014-032](#), [JINST 14 \(2019\) 12, P12006](#), and [J.High Energy Phys. 05 \(2024\) 162](#)

## More activities:

- (**Ongoing**) Member of the Distributed Analysis Support Team (DAST, since Spring 2017). DAST is a group of expert shifters who serve as the first point of contact for users seeking assistance with distributed analysis on the ATLAS grid, including issues related to analysis tools, Distributed Data Management, and offline software. I typically cover one-week shifts each month.
- Co-developer and maintainer of the [IFFTruthClassifier](#) tool (Summer 2018 – Summer 2022), hosted by the ATLAS Isolation and Fake Forum group. This tool, which enables the categorization of simulated leptons into different background classes, is now widely used within the ATLAS collaboration.
- Part of the team performing quality control of the Micromegas readout boards (Summer 2020). This work was conducted as part of the New Small Wheel Phase-1 Upgrade, aimed at replacing the so-called “Small Wheels” of the ATLAS muon spectrometer.
- Qualification task in the ATLAS collaboration (Spring – Summer 2012): maintenance and improvement of the software used by the ATLAS Supersymmetry group to generate analysable data and simulation samples in formats easily accessible to group members (the so-called SUSY D3PDs).

## Editorial work

- Editor of the *Type-II Seesaw Higgs triplet productions and decays at the LHC* paper ([J.High Energy Phys. 06 \(2025\)](#))
- Contact editor of the *Search for RPV SUSY in a final state containing leptons and many jets* ATLAS paper ([Eur.Phys.J. C 81 \(2021\) 1023](#))
- Contact editor of the *Search for charged Higgs scalar bosons* ATLAS paper ([J.High Energy Phys. 06 \(2021\) 146](#))
- Contact editor of the following SUSY SS/3Lep ATLAS papers: [J. High Energy Phys. 1709 \(2017\) 084](#), [J.High Energy Phys. 1406 \(2014\) 035](#)
- Contact editor of the *Electron and photon efficiencies in LHC Run 2 with the ATLAS experiment* paper ([J.High Energy Phys. 05 \(2024\) 162](#))
- Editor of the *Combined electron/photon performance* ATLAS paper ([JINST 14 \(2019\) 12, P12006](#))
- Contact editor of *Modelling of Track Reconstruction Inside Jets with the ATLAS  $\sqrt{s} = 13$  TeV pp dataset* PUB note ([ATL-PHYS-PUB-2017-016](#))
- Contact editor of numerous ATLAS internal notes that document in detail the work performed by me or by the team I have worked/am working with. These documents are used, for example, by the Supersymmetry group to review and further approve an analysis as part of the publication process
- Member of the review team for numerous SUSY analyses toward their approval by the ATLAS Supersymmetry group
- Member of the review team for one BSM Higgs analysis toward its approval by the ATLAS Higgs and Diboson Searches group

- Member of the editorial board for four ATLAS publications: [J.High Energy Phys. 08 \(2024\) 164](#), [Phys. Rev. Lett. 126 \(2021\) 072301](#), [Phys. Rev. D 98 \(2018\) 092002](#), [ATLAS-CONF-2019-045](#).
- The chair of the editorial board for one ATLAS publication: [J.High Energy Phys. 08 \(2024\) 164](#).
- Reviewer of one submission to JINST (Jan 2025)

## Student supervision

- As a subgroup convener or analysis contact, I was responsible for guiding and supporting students from various international teams.
- Supervisor of several students at IFIN-HH, multiple undergraduate students at the University of Montreal during my post-doctoral fellowship, and one student at CPPM during my final year of PhD.
- Supervisor of one CERN summer student working on the *Presampler energy scale calibration* using electrons from  $W$  or  $Z$  boson decays recorded in Run 2 data. The job details are available [here](#) (Summer 2021).

## (Selected) Event Administration and Coordination

- Organizer of the work package related to CTIDE activities at the ATLAS Tracking Workshop, Chateau de Bossey (Switzerland), Mai 2025, 74 participants, <https://indico.cern.ch/event/1503595/>
- Co-organizer of the work package related to CTIDE activities at the ATLAS Tracking Workshop, Chateau de Bossey (Switzerland), June 2024, 75 participants, <https://indico.cern.ch/event/1374927>
- Chairperson and session organizer of the *ATLAS Higgs and Diboson Searches, and Exotics 2023 workshop*, Barcelona (Spain), Oct. 2023, 161 participants, <https://indico.cern.ch/event/1276819/timetable/>. Co-organizer of the session “BSM searches with multi-leptons (electrons and muons) and photons”. I worked to prepare the scientific programme for this session, and to select the speakers
- Chairperson and co-organizer of the *SUSY workshop*, online due to the COVID-19 pandemic, Sep. 2021, <https://indico.cern.ch/event/1056428/>. It was interesting to prepare the “Flash talks: current activities” sessions
- Chairperson and session organizer of the *Run 2 physics: reaching new heights workshop*, CERN, Geneva (Switzerland), Dec. 2019, 496 participants, <https://indico.cern.ch/event/822577/>. Co-organizer of the session “Beyond MC for background estimation”. I enjoyed a lot the work done to prepare the scientific programme for this session, and to select the speakers
- Chairperson and session organizer, *ATLAS Egamma workshop*, Sheffield (United Kingdom), Jan. 2019, 76 participants, <https://indico.cern.ch/event/748648/>. I was in charge of the sessions covering the physics program from the ATLAS Isolation and Fake Forum group
- Chairperson, *ATLAS-Romania annual meeting*, Bucharest (Romania), Oct. 2014, 8 participants, <https://indico.cern.ch/event/331448>. I was in charge of the “Higgs boson” session
- Local Organization, *Liquid Argon Calorimeter collaboration week*, Workshop, Marseilles (France), Sept. 2014, 70 participants, <https://indico.cern.ch/event/291819/>
- Local Organization, *XXI. International Workshop on Deep-Inelastic Scattering and Related Subjects*, Conference, Marseilles (France), Apr. 2013, 303 participants, <http://dis2013.in2p3.fr> ([closing remarks](#))

## Additional Event Administration jobs

- Member-at-large in the Search Committee for 2024 ATLAS Computing co-coordinator

- Chairperson, ATLAS rehearsal session for [NuFact 2024](#) conference, as appointed by ATLAS Speakers Committee. Quoting them, “talk rehearsal is chaired by experienced ATLAS physicists who have broad experience in High Energy Physics”
- Chairperson, ATLAS rehearsal session for [ICNFP 2021](#) conference
- Member of the jury panel in the *Symposium for Young Scientists* organized by Society for Canadian Women in Science and Technology (SCWIST), Summer 2021, <https://scwist.ca/forms/young-scientists-on-board>. Category: Physical Science – Particle Physics. Details on the three live events were announced [here](#) (YouTube [video](#)), [here](#) (YouTube [video](#)) and [here](#) (YouTube [video](#))

## ATLAS internal documentation

- Author of 34 internal notes documenting the studies I have done in the various ATLAS Physics Analysis and Combined Performance subgroups

## Presentations in international conferences

*Selected presentations in the last years. All ATLAS presentations can be found [here](#)*

- O. Ducu (conference talk), *Searches for singly- and doubly-charged Higgs bosons in ATLAS*, HIGGS 2024 conference, Uppsala, Sweden, 148 participants, <https://indico.cern.ch/event/1391236/timetable/>
- O. Ducu (conference talk), *SUSY in ATLAS and CMS*, Workshop on the Standard Model and Beyond (Corfu 2023), Corfu, Greece, <https://indico.cern.ch/event/1311102/contributions/5525270/>
- O. Ducu (poster and mini-presentation), *ATLAS searches for Higgsinos with R-parity violating couplings in events with leptons*, XI International Conference on New Frontiers in Physics (ICNFP 2022), Kolymbari (Greece), <https://indico.cern.ch/event/1133591/contributions/4949585/>
- O. Ducu (poster and mini-presentation), *Electron efficiency in LHC Run 2 with the ATLAS experiment*, XI International Conference on New Frontiers in Physics (ICNFP 2022), Kolymbari (Greece), <https://indico.cern.ch/event/1133591/contributions/4949531/>
- O. Ducu (poster), *ATLAS Run 3 charged-particle reconstruction performance in energetic jets*, XLI International Conference on High Energy Physics (ICHEP 2022), Bologna (Italy), 1546 participants, <https://agenda.infn.it/event/28874/>. Poster: <https://cds.cern.ch/record/2815385>
- O. Ducu (conference talk), *Searches for BSM physics using challenging and long-lived signatures with the ATLAS detector*, XXIX International Workshop on Deep-Inelastic Scattering and Related Subjects (DIS 2022), Santiago de Compostela (Spain), 381 participants, <https://indico.cern.ch/event/1072533/contributions/4767054/>
- O. Ducu (conference talk), *Searches for SUSY EWK*, 56th Rencontres de Moriond 2021: Electroweak Interactions & Unified Theories (MoriondEW@home 2021), online due to the COVID-19 pandemic, 216 participants, <http://moriond.in2p3.fr/2021/EW/>
- O. Ducu (conference talk), *Supersymmetry searches at the LHC*, 15th Rencontres du Vietnam: Behind and Beyond the Standard Model at the LHC, Future Colliders and Elsewhere (BSSM 2019), Qui Nhon (Vietnam), 49 participants, <https://www.icisequynhon.com/conferences/2019/BSSM-LHC>
- O. Ducu (conference talk), *Searches for Supersymmetry in R-Parity violating and long-lived signatures with ATLAS detector*, International Conference of High Energy Physics, Session C : Heavy Particles and Flavors (LISHEP 2018), Salvador, Bahia (Brazil), 93 participants, <https://indico.cern.ch/event/675301>
- O. Ducu (conference talk), *Inclusive searches for squarks and gluinos with the ATLAS detector*, European Physical Society Conference on High Energy Physics (EPS-HEP 2017), Venice (Italy), 969 participants, <https://indico.cern.ch/event/466934/>



- O. Ducu (conference talk), *Inclusive searches for squarks and gluinos with the ATLAS detector*, Phenomenology Symposium (PHENO 2014), Pittsburgh (USA), <https://indico.cern.ch/event/294993>
- O. Ducu (poster), *Search for supersymmetry with same-sign leptons and jets with the ATLAS detector*, International Conference on new Frontiers in Physics (ICNFP 2013), Kolymbari (Greece), <https://indico.cern.ch/event/198153/>. Poster: <https://cds.cern.ch/record/1599136>
- O. Ducu (poster), *Search for supersymmetry with same-sign leptons and jets with the ATLAS detector using  $21 \text{ fb}^{-1}$  of data*, European Physical Society Conference on High Energy Physics (EPS-HEP 2013), Stockholm (Sweden), <https://indico.cern.ch/event/218030/>. Poster: <https://cds.cern.ch/record/1558149>

## Approval presentations in the ATLAS collaboration

Details on the importance of the approval presentations in ATLAS are given [here](#), [here](#), and [here](#)

- O. Ducu, ATLAS [paper approval](#) of [HNL Run-2 analysis](#) (April 2025)
- O. Ducu, EXOTICS group [analysis approval](#) of [HNL Run-2 analysis](#) (March 2025)
- O. Ducu, ATLAS [paper approval](#) of [J.High Energy Phys. 02 \(2024\) 107](#) (March 2023)
- O. Ducu, ATLAS [paper approval](#) of [J.High Energy Phys. 11 \(2023\) 150](#) (Aug. 2022)
- O. Ducu, Higgs and Diboson Searches group [analysis approval](#) of [J.High Energy Phys. 06 \(2021\) 146](#) paper (Sept. 2020)
- O. Ducu, Electron/Photon group [analysis approval](#) of [JINST 14 \(2019\) 12, P12006](#) paper (Mar. 2019)
- O. Ducu, ATLAS [paper approval](#) of [J.High Energy Phys. 1709 \(2017\) 084](#) (Apr. 2017)
- O. Ducu, Supersymmetry group [analysis approval](#) of [Eur.Phys.J. C 76 \(2016\) 259](#) paper (Nov. 2015)
- O. Ducu, Supersymmetry group [analysis approval](#) of [J.High Energy Phys. 06 \(2014\) 035](#) paper (Sept. 2013)

## Other presentations (in ATLAS collaboration or national meetings)

Selected presentations in the last years

- O.Ducu, *Activity report from CTIDE*, ATLAS Tracking Workshop (May 2025), Chateau de Bossey (Switzerland), 74 participants, <https://indico.cern.ch/event/1503595>
- O.Ducu, *Review of CP kick-off: Feedback from tracking and muon CP groups*, End-of-the year ATLAS physics workshop (Dec. 2024), CERN (Switzerland), <https://indico.cern.ch/event/1475731/>
- O.Ducu, *Run 2 + Run 3 Status and Prospects: Strong*, ATLAS SUSY workshop (Sept. 2024), CERN (Switzerland), 102 participants, <https://indico.cern.ch/event/1437473>
- O.Ducu, *Run 3 performance and recommendations*, ATLAS Tracking Workshop (Jun. 2024), Chateau de Bossey (Switzerland), 75 participants, <https://indico.cern.ch/event/1374927>
- O.Ducu, *Status of Tracking and Upgrade*, ATLAS Electron/Photon Workshop (Apr. 2024), Valencia (Spain), 50 participants, <https://indico.cern.ch/event/1364593>
- O.Ducu, *ATLAS Higgs Beyond the SM subgroup report*, ATLAS Higgs and Diboson Searches 2023 “end-of-year” Plenary meeting (Jan. 2024), CERN (Switzerland), <https://indico.cern.ch/event/1359088/>
- O. Ducu, *Feedback From Physics Analysis: ATLAS searches*, ATLAS Electron/Photon Workshop (Mar. 2023), CERN (Switzerland), 70 participants, <https://indico.cern.ch/event/1245976/>
- O. Ducu *Data Preparation report (incl. lumi, reprocessing)*, ATLAS collaboration week (Feb. 2023), CERN (Switzerland), <https://indico.cern.ch/event/1225750/>



- O. Ducu *Status of Data reprocessing and other Data Preparation news*, ATLAS collaboration weekly meeting (18 Oct. 2022), CERN (Switzerland), <https://indico.cern.ch/event/1209608>
- O. Ducu *Supersymmetry working group report*, ATLAS collaboration week “Ready for Run 3” (June 2022), CERN (Switzerland), 569 participants, <https://indico.cern.ch/event/1149016>
- O. Ducu, *A search for non-standard Higgs bosons with the ATLAS experiment*, [Seminar](#) organized by CPPM (May 2021), online due to the COVID-19 pandemic, <https://indico.in2p3.fr/event/24110/>
- O. Ducu, *Search for SUSY in final states with same charge or three leptons and jets using 13 TeV ATLAS data*, Winter Nuclear and Particle Physics Conference (Feb. 2018), Mont-Tremblant (Canada), <https://meetings.triumf.ca/indico/event/17/overview>
- O. Ducu, *Object Changes and R21 Scrutiny*, ATLAS Supersymmetry Workshop (May 2018), Stockholm (Sweden), 115 participants, <https://indico.cern.ch/event/709718/>
- O. Ducu, *Isolation and Fake Forum report*, ATLAS collaboration week (June 2018), Tokyo (Japan), 301 participants, <https://indico.cern.ch/event/648950/>
- O. Ducu, *Electrons, views from the Isolation and Fake Forum*, ATLAS Electron/Photon Workshop (Nov. 2017), Hamburg (Germany), 73 participants, <https://indico.cern.ch/event/649891/>
- O. Ducu, *Deep Neural Network for Electron ID*, ATLAS Electron/Photon Workshop (Nov. 2017), Hamburg (Germany), 73 participants, <https://indico.cern.ch/event/649891/>
- O. Ducu, [invited speaker](#), *Search for physics beyond the Standard Model with the ATLAS detector*, Canadian Association of Physicists Congress (May 2017), Kingston (Canada), 509 participants, <https://www.cap.ca/congress-conference/past-congress/congress-2017/>
- O. Ducu, *Fake lepton background estimates*, ATLAS Supersymmetry Workshop (May 2017), Bucharest (Romania), 261 participants, <https://indico.cern.ch/event/605722/>
- O. Ducu, *Low and medium  $E_T$  electrons: feedback from physics groups*, ATLAS Electron/Photon Workshop (Nov. 2016), Thessaloniki (Greece), 70 participants, <https://indico.cern.ch/event/567645/>
- O. Ducu, *Searches for squarks and gluinos*, ATLAS Physics Jamboree (Dec. 2016), Geneva (Switzerland), <https://indico.cern.ch/event/574031/>
- O. Ducu, *Search for SUSY with two same-sign or three leptons, (b-) jets and missing energy*, ATLAS Canada Workshop (May 2016), Ottawa (Canada), 43 participants, <https://indico.cern.ch/event/509885/>
- O. Ducu, *Search for strongly produced Supersymmetric particles with two same-sign leptons and jets*, Physics ATLAS France (PAF 2014), Puy-en-Velay (France), 103 participants, <https://indico.cern.ch/event/318822/>
- O. Ducu, *Electrons and photons: feedback from SUSY Group*, ATLAS Electron/Photon Workshop (2014), Paris (France), <https://indico.cern.ch/event/310874/>
- O. Ducu, *Search for new physics in events with 2 same sign leptons, jets and  $E_T^{\text{miss}}$  with ATLAS and CMS detectors*, “Groupement De Recherche” Terascale meeting (2014), Paris (France), 66 participants, <https://indico.in2p3.fr/event/8565/>

## Outreach

- Co-organizer of the *The Romanian High-School Students CERN Internship Programme*, Nov. 2021, <https://indico.cern.ch/event/856138/>. Most challenging was to find supervisors and 12 projects for the high-school students to work on, during their stay at CERN, and to work on the selection of 23 students from around 230 (very good) registrations
- Chairperson and co-organizer of the *first CERN Romanian Teacher Programme* event, online due to the COVID-19 pandemic, Apr. 2021, <https://indico.cern.ch/event/1025773/>. One interesting task was the review of projects sent by (approximately) 180 teachers, on topics related to elementary particle physics, to be discussed mainly with pupils from garden-school to end of high-school
- Tour guide (Apr. 2021) for ATLAS underground virtual visit organized for the *ONLINE CERN Romanian Teacher Programme* <https://indico.cern.ch/event/1029702/>
- ATLAS MasterClass (Mar. 2018), Cluj-Napoca, Romania, <https://indico.cern.ch/event/716175/>
- Tour guide (Nov. 2015) for ATLAS underground visit of Romania's Permanent Representative to the UN in Geneva (Switzerland), <https://cds.cern.ch/record/2102379>

