



Louis D'Eramo

Chargé de Recherche - CNRS

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Research profile

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ResearcherId:

[Q-5816-2017](https://pubs.acs.org/doi/10.26434/chemrxiv-2017-q-5816)

Inspire Hep:

[INSPIRE-00550307](https://inspirehep.net/literature/1555037)

Member of ATLAS Collaboration at CERN since 2016, I have extensive experience in experimental high-energy physics, focusing on Higgs boson studies and detector upgrades for the High Luminosity phase of the LHC. My work includes developing time calibration for High Granularity Timing Detector and investigating the Higgs boson self-coupling through pair production in photon and b-quark final states. Previously, I contributed to trigger system performance studies and Monte Carlo simulations for the LHC. During my PhD, I participated to the discovery of the Higgs decay into b-quarks and characterized pixel sensors for the ATLAS Inner Tracker upgrade.

Education

2015 - 2016 Master (M2)

Université Paris 6/7/11 & CEA (Fr)

NPAC (Nuclear, Particle, Astroparticle and Cosmology), major: nuclear physics and particles.

2014 - 2015 Master (M2)

ENS Cachan (Fr)

Training to teach for Higher Education studies: agrégation Physique.

2012 - 2014 Bachelor (L3) & Master (M1)

ENS Cachan & Université Paris 6 (Fr)

PHYSique Théorie Expérience et Modélisation (PHYTEM).

Research experience

12/22 - now

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Laboratoire Physique Clermont Auvergne (Fr)

ATLAS Collaboration.

- Development of time calibration for the High Granularity Timing Detector (HGTD) sensors for the high-luminosity phase of the LHC ;
- Study and measurement of the trilinear coupling of the Higgs boson in the context of double production using the final state of photon and b-quark pairs.

Selected publications: [arXiv:2507.03495](https://arxiv.org/abs/2507.03495) , [ATL-PHYS-PUB-2025-006](https://arxiv.org/abs/2507.03495) , [JHEP 01 \(2024\), 066](https://arxiv.org/abs/2507.03495) .

11/19 - 11/22

Research Assistant - Postdoc

Northern Illinois University (USA)

ATLAS Collaboration, based at CERN.

- Study of the performance of a trigger system based on traces for the High-Luminosity phase of the LHC ;
- Contact for the production of a pair of Higgs bosons in the photon and b-quark decay channel.
- Responsible for producing Monte Carlo simulations for performance projections and physics analyses for the high-luminosity phase of the LHC;

Selected publications: [ATL-DAQ-PUB-2023-001](https://arxiv.org/abs/2303.00101) , [JHEP 08 \(2022\), 027](https://arxiv.org/abs/2303.00101) , [Phys. Lett. D 106 \(2022\), 052001](https://arxiv.org/abs/2303.00101) .

09/16 - 09/19

PhD

Laboratoire de Physique Nucléaire et des Hautes Énergies (Fr)

Study of the decay properties of the Higgs boson into two b quarks and upgrade of the ATLAS inner tracker:

- Study of the performance of a trigger system based on traces for the Run-3 of the LHC ;
- Measurement and analysis of the properties of pixel sensors for the Inner Tracker (ITk) project during beam tests ;
- Observation of the Higgs boson coupling in the two b quark decay channel with associated production of a vector boson.

Selected publications: [JINST 16 \(2021\), P07006](https://arxiv.org/abs/2107.00066) , [JHEP 05 \(2019\), 141](https://arxiv.org/abs/2107.00066) , [arXiv:1902.00134](https://arxiv.org/abs/2107.00066) , [Nucl. Instrum. Meth. A 927 \(2019\), 219-229](https://arxiv.org/abs/2107.00066)

Teaching duties

2023 - now Vacation

Université Clermont Auvergne (Fr)

Supervision of practice sessions for the Machine Learning course for the Master 2 PFA and University Diploma in Data Science (16 hours).

2017 - 2019 Teaching assignment

Sorbonne Université (Fr)

Two-year contract (128 hours) covering two teaching units: TD in general physics for first-year medical students and Supervision of practical work for third-year bachelor's students.

Responsabilities

Inside the ATLAS collaboration:

- **2025 -** : Co-leader of the HGTD detector simulation, performance, and physics study subgroup;
- **2025 - 2027**: Member of the speaker committee for the HGTD collaboration;
- **2024 -** : Co-leader of the analysis subgroup focusing on photon decays of the Higgs boson produced singly or in pairs (~ 100 members);
- **2023 -** : Responsible for monitoring clock propagation and calibration issues for the HGTD detector;
- **2023 - 2024**: Co-leader of the joint software development for analyses involving the production of a pair of Higgs bosons;
- **2023 - 2025**: Responsible for extrapolations for the high-luminosity phase of the LHC for searches involving a pair of vector bosons or Higgs bosons, followed by analyses involving one or more Higgs bosons;
- **2020 - 2025**: Responsible for the production of simulation samples for the High-Luminosity phase of the LHC;
- **2020 - 2023**: Co-responsible for analyses of the decay of a pair of Higgs bosons into a pair of photons and b quarks (~ 40 members).

Outside the collaboration:

- **2025 -** : Member of organisation committee of the Journées Rencontre Jeunes Chercheur.se.s (JRJC) ;
- **2024 - present**: Co-responsible for the DRD7.3b1 project "Strategies for characterizing and calibrating sources impacting time measurements" ;
- **2017 - 2018**: President then vice-president of the organization committees of the Rencontre Jeunes Physiciens (RJPs).

Outreach activities

Seminars:

- **2024**: "Sciences à Corot" (Savigny sur Orge) *Plongée dans le monde de l'infiniment petit: à la recherche du boson de Higgs au CERN* ;
- **2022**: Eurêka festival (Figeac) *Comment déchiffrer la structure élémentaire de la matière?* ;
- **2019**: Ma thèse en 5 minutes (Paris) *À la recherche de la beauté du boson de Higgs* ;
- **2018**: Rencontres Jeunes Physicien.ne.s (Paris) *Looking for Higgs Boson beauty thanks to Machine Learning techniques* ;

Others:

- **2023 -** : Infinis à L'École: outreach initiative for elementary school students ;
- **2024**: Author of an outreach article for the Clermont Auvergne University website: [How does the moon influence tides?](#) ;
- **2021** CinéGlobe: Volunteering for the "Ciné-globe" short film festival ;
- **2020 - 2022** ATLAS underground visit guide ;
- **2016 - 2019** Fête de la science: presentation about the scientific activities of the LPNHE.