Scientific production on ATLAS and FCC of the members of the APC Higgs team

December 19, 2024

Contents

1 Post-docs supervised

- 2023–2024: Tong Li, on "Calorimeter R&D for the future circular collider and search for di-Higgs production with $HH \to b\bar{b}\tau\tau$"
- 2022–2023: Giulia Di Gregorio, on "Measurement of Higgs boson couplings with VH, $H \to b\bar{b}$ and search for di-Higgs production with $HH \to b\bar{b}\gamma\gamma$"
- 2018–2020: Ioannis Nomidis (in LPNHE), on "measurement of Higgs boson decays to $\gamma\gamma$ and search for diphoton resonances with the ATLAS detector"
- 2017–2019: Kun Liu (in LPNHE), on "measurement of Higgs boson decays to $b\bar{b}$ with the ATLAS detector"

2 Ph.D. theses supervised

- Qiuping Shen, *Constraints on Higgs Self-coupling via $HH \to b\bar{b}\gamma\gamma$ and Joint Interpretation of Single- and Double-Higgs Analyses Using Data Collected with the ATLAS Detector at $\sqrt{s} = 13$ TeV*, G. Marchiori and H. Yang (dir.), 22/11/2024, Université Paris Cité and Shanghai Jiao Tong University, CERN-THESIS-2024-240
- Keerthi Nakkalil, *Upgrade of the ATLAS tracking detector and measurement of the Higgs boson production cross-section at 13.6 TeV*, M. Bomben and G. Marchiori (dir.), 3/10/2024, Université Paris Cité CERN-THESIS-2024-270
- Yulei Zhang, *Constraints on the Higgs Self-coupling at the LHC with sqrt(s) = 13 TeV and Long-lived Particles Searches with a Future Lepton Collider*, G. Bernardi and L. Li (dir.), 18/12/2023, Université Paris Cité and Shanghai Jiao Tong University, CERN-THESIS-2024-188
- Ang Li, *Search for di-Higgs production and measurement of the Higgs boson self-coupling in the final state with a pair of b quarks and a pair of tau leptons with the ATLAS detector at the LHC, Perspectives on the measurement of the Higgs boson mass and the electron-positron to ZH cross-section at the Future Circular Collider*, G. Bernardi (dir.), 27/11/2023, Université Paris Cité, CERN-THESIS-2024-035
- Romain Bouquet, *Physics with b-jets using the ATLAS Run 2 data: from calibration to Higgs boson couplings measurements in the VH, $H \to b\bar{b}$ channel*, G. Marchiori (dir.), 24/01/2023, Sorbonne Université, CERN-THESIS-2023-193
- Reem Taibah, *Upgrade of the ATLAS tracking detector in preparation of the High Luminosity phase of the LHC*, M. Bomben et F. Crescioli (dir.), 17/09/2021, Université de Paris, CERN-THESIS-2021-204

- Ahmed Tarek, *Measurement of Higgs boson production cross sections in the diphoton channel with the full ATLAS Run-2 data and constraints on anomalous Higgs boson interactions*, G. Marchiori (dir.), 30/09/2019, Université de Paris, CERN-THESIS-2019-178, **ATLAS Thesis award 2020**
- Ilaria Luise, *Observation of the Higgs boson coupling to b-quarks with the ATLAS detector*, G. Bernardi and G. Marchiori (dir.), 27/09/2019, Université de Paris, CERN-THESIS-2019-186
- Audrey Ducourthial, *Upgrade of the ATLAS experiment Inner Tracker and related physics perspectives of the Higgs boson decay into two b quarks*, M. Bomben (dir.), 26/10/2018, Université de Paris, CERN-THESIS-2018-28
- Changqiao Li, *B-tagging Calibration and Observation of Higgs Boson Decays to a pair of bottom quarks with the ATLAS Detector*, G. Marchiori and Y. Liu (dir.), 6/11/2018, CERN-THESIS-2018-301
- Dilia Portillo, *Search for Dark Matter Produced in Association with a Higgs Boson Decaying to a pair of bottom quarks with the ATLAS Detector*, 24/10/2018, G. Bernardi and S. De Cecco (dir.), CERN-THESIS-2018-386
- Stefano Manzoni, *Physics with photons with the ATLAS Run 2 data : calibration and identification, measurement of the Higgs boson mass and search for supersymmetry in di-photon final state*, 15/12/2017, G. Marchiori and L. Carminati (dir.), CERN-THESIS-2017-303, **ATLAS Thesis award 2018**
- Kun Liu, *Observation of the Higgs particle in $\gamma\gamma$ events and search for the Higgs particle in $Z\gamma$ events at ATLAS*, 24 juin 2014, G. Marchiori and Y. Liu (dir), CERN-THESIS-2014-146, **ATLAS Thesis award 2015**

3 Internships supervised

2024

- Kevin Dewyspelaere, M2 (IMT Atlantique - Nantes), G. Bernardi (dir.)
- Tsovinar Karapetyan, M2 (Université Paris Sud), M. Bomben (dir.)

2023

- Justin Albinet, L3 (Université Paris-Cité), G. Marchiori (dir.)
- Kevin Belin, L3 (Université Paris-Cité), M. Bomben (dir.)
- Matthieu Gaillard, M2 (Université Paris-Cité), G. Bernardi (dir.)
- Robin Signoret, M1 (Sorbonne Université), G. Marchiori (dir.)

2022

- Paul Guimbard, L3 (ENS Paris-Saclay), G. Marchiori (dir.)
- Alexis Maloizel, M2 (ENS Paris-Saclay), G. Marchiori (dir.)
- Arnaud Pénisson, L3 (Université Paris-Cité), M. Bomben (dir.)
- Lucien Sochard, M1 (Université Paris-Cité), G. Bernardi (dir.)

2021

- Aurelie Bojan, M1 (Sorbonne Université), G. Bernardi (dir.)
- Paul Paquiez, L3 (ENS Paris-Saclay), G. Marchiori (dir.)
- Mariette Jolly, M2 (NPAC), G. Marchiori (dir.)

2020

- Theophile Boinnard, L3 (ENS Cachan), M. Bomben and F. Crescioli (dir.)
- Ang Li, M2 (ETH Zurich and Ecole Politechnique Palaiseau), G. Bernardi (dir.)
- Alexis Maloizel, M1 (ENS Cachan), G. Marchiori and I. Nomidis (dir.)

- Mariette Jolly, Noemi Pilleux, Philippe Fourquet, M2 (NPAC), M. Bomben and G. Marchiori (dir.)

2019

- Romain Bouquet, M2 (NPAC), G. Marchiori (dir.)
- Eva Guilloton, M2 (Université de Montpellier), G. Bernardi (dir.)
- Alexis Maloizel, L3 (ENS Cachan), G. Marchiori, I. Nomidis (dir.)
- Simon Metayer, Theraa Tork, M2 (NPAC), M. Bomben, G. Marchiori (dir.)
- Muriel Vilage, L3 (Université Paris Diderot) M. Bomben and R. Camacho Toro (dir.)

2018

- Malak Hoballah, Yajun He, M2 (NPAC), M. Bomben and G. Marchiori (dir.)
- Kevin El akkari M1 (Université Paris Diderot), G. Marchiori (dir.)
- Geoffroy Delamare, L3 (ENS Cachan), M. Bomben (dir.)
- Raphaël Bajou, M1 (Université Paris Diderot), M. Bomben and R. Camacho Toro (dir.)

2017

- Thomas Grammatico, Robin Caron, M2 (NPAC), M. Bomben and G. Marchiori (dir.)
- Marianna Liberatore, M2 (NPAC), G. Marchiori (dir.)
- Yehudi Simon, L3 (ENS Paris Saclay), G. Marchiori (dir.)

2016

- Mykyta Haranko, M2 (Ukraine), M. Bomben, G. Calderini, G. Marchiori (dir.)
- Ilaria Luise, M2 (NPAC), G. Bernardi and G. Marchiori (dir.)

2015

- Daniel Cuesta, M1 (Université Paris-Diderot), G. Marchiori (dir.)
- Audrey Ducourthial, M2 (NPAC), M. Bomben (dir.)
- Changqiao Li, M2 (USTC, China), G. Marchiori (dir.)

2014

- Charles Delporte, M1 (UPMC), G. Marchiori (dir.)
- Audrey Ducourthial, M1 (UPMC), M. Bomben (dir.)
- Stefano Manzoni, these de laurea italienne (M2, Università di Milano), G. Marchiori and L. Carminati (dir.)

2013

- Thanyanan Phuphachong, M1 (UPMC), G. Marchiori (dir.)

2011

- Gonzague Le Mesre de Pas, école d'ingénieur, M. Bomben and J. Chauveau (dir.)
- Kun Liu, M2 (China), G. Marchiori (dir.)
- Anais Moller, M1 (Université Simon Bolivar, Caracas), G. Marchiori (dir.)

4 Publications with significant contributions from our team

[1] ATLAS Collaboration. *ATLAS Insertable B-Layer Technical Design Report*. Tech. rep. CERN-LHCC-2010-013. ATLAS-TDR-19. 2010. URL: https://cds.cern.ch/record/1291633.

[2] ATLAS Collaboration. *ATLAS Sensitivity Prospects for Higgs Boson Production at the LHC Running at 7 TeV*. Tech. rep. ATL-PHYS-PUB-2010-009. 2010. URL: http://cds.cern.ch/record/1278455.

[3] ATLAS Collaboration. *Evidence for prompt photon production in pp collisions at $\sqrt{s}$ = 7 TeV with the ATLAS detector*. Tech. rep. ATLAS-CONF-2010-077. 2010. URL: http://cds.cern.ch/record/1281368.

[4] A Lounis et al. *TCAD Simulations of ATLAS Pixel Guard Ring and Edge Structure for SLHC Upgrade*. Tech. rep. ATL-UPGRADE-PUB-2010-001. 2010. URL: http://cds.cern.ch/record/1233750.

[5] ATLAS Collaboration. *Expected photon performance in the ATLAS experiment*. Tech. rep. ATL-PHYS-PUB-2011-007. 2011. URL: http://cds.cern.ch/record/1345329.

[6] ATLAS Collaboration. "Limits on the production of the Standard Model Higgs Boson in *pp* collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector". In: *Eur. Phys. J.* C71 (2011), p. 1728. DOI: 10.1140/epjc/s10052-011-1728-9. arXiv: 1106.2748 [hep-ex].

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[9] ATLAS Collaboration. "Search for the Standard Model Higgs boson in the two photon decay channel with the ATLAS detector at the LHC". In: *Phys. Lett.* B705 (2011), pp. 452–470. DOI: 10.1016/j.physletb.2011.10.051. arXiv: 1108.5895 [hep-ex].

[10] ATLAS Collaboration. "A Particle Consistent with the Higgs Boson Observed with the ATLAS Detector at the Large Hadron Collider". In: *Science* 338 (6114 2012), p. 1576. DOI: 10.1126/science.1232005.

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[12] ATLAS Collaboration. "Combined search for the Standard Model Higgs boson using up to 4.9 fb^{-1} of *pp* collision data at $\sqrt{s}$ = 7 TeV with the ATLAS detector at the LHC". In: *Phys. Lett.* B710 (2012), pp. 49–66. DOI: 10.1016/j.physletb.2012.02.044. arXiv: 1202.1408 [hep-ex].

[13] ATLAS Collaboration. "Measurement of the isolated di-photon cross-section in *pp* collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector". In: *Phys. Rev.* D85 (2012), p. 012003. DOI: 10.1103/PhysRevD.85.012003. arXiv: 1107.0581 [hep-ex].

[14] ATLAS Collaboration. "Measurement of the production cross section of an isolated photon associated with jets in proton-proton collisions at $\sqrt{s}$ = 7 TeV with the ATLAS detector". In: *Phys. Rev.* D85 (2012), p. 092014. DOI: 10.1103/PhysRevD.85.092014. arXiv: 1203.3161 [hep-ex].

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[37] ATLAS Collaboration. "Measurement of the photon identification efficiencies with the ATLAS detector using LHC Run-1 data". In: *Eur. Phys. J.* C76.12 (2016), p. 666. DOI: 10.1140/epjc/s10052-016-4507-9. arXiv: 1606.01813 [hep-ex].

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[54] ATLAS Collaboration. "Search for top quark decays $t \to qH$, with $H \to \gamma\gamma$, in $\sqrt{s}$ = 13 TeV *pp* collisions using the ATLAS detector". In: *JHEP* 1710 (2017), p. 129. DOI: 10.1007/JHEP10(2017)129. arXiv: 1707.01404 [hep-ex].

[55] ATLAS Collaboration. "Searches for the $Z\gamma$ decay mode of the Higgs boson and for new high-mass resonances in *pp* collisions at $\sqrt{s}$ = 13 TeV with the ATLAS detector". In: *JHEP* 1710 (2017), p. 112. DOI: 10.1007/JHEP10(2017)112. arXiv: 1708.00212 [hep-ex].

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