
Andrea Coccaro

Personal Information

Born
Nationality
Family status

Positions

since 2017 Staff researcher at INFN, Italy
2015 - 2017 Maître Assistant, University of Geneva, Switzerland
2012 - 2015 Research Associate, University of Washington, USA
2010 - 2012 Research Associate, Genoa University, Italy

Education

2010 Ph.D. in Physics, University of Genoa
Thesis: Tracking and b -tagging for the ATLAS trigger system [[CERN-THESIS-2010-035](#)]
2006 Master degree in Physics, University of Genoa
Thesis: Online selection of b -jets for the ATLAS experiment at LHC and its impact on the physics program (in italian)
Grade: 110/110 *cum laude*
2004 Bachelor degree in Physics, University of Genoa
Thesis: Calibration with paramagnetic and diamagnetic salts of the susceptometer for the measure of the iron's quantity in thalassemic patients (in italian)
Grade: 110/110 *cum laude*

Teaching

2019 - 2022 Teaching professor
Physics of Fundamental Interactions at Colliders, University of Genoa
2018 - 2020 Teaching professor
Laboratory 2 (basics of microelectronics), University of Genoa
2016 - 2017 Teaching assistant
Electromagnetism course for the Physics students, University of Geneva
2007 - 2009 Teaching assistant
General physics course for Chemical Engineering students, University of Genoa

Mentoring of students

- Since 2019** Co-supervisor of master and PhD students at the University of Genoa
2016-2017 Co-supervisor of a master student at the University of Rome La Sapienza
Since 2016 Supervision of the projects of seventeen students for becoming members of the ATLAS collaboration
2015-2017 Supervision of day-to-day work of three doctoral students at the University of Geneva
Since 2015 Supervision of five summer students at CERN
2012-2015 Supervision of day-to-day work of three master students at the University of Washington

Research Activities

- Since 2022** Analysis of $B_s \rightarrow D_s K$ at FCC-ee
Since 2015 Searches for new heavy resonances decaying to b -jets
Since 2015 Flavour tagging improvements at high-transverse momentum
2015-2016 New proposal for a model-independent search program for long-lived particles
2015-2016 Studies for a vertex detector geometry for the FCC-hh collider
Since 2014 Application of deep-learning techniques to the reconstruction of physics objects
2012-2015 Searches for exotic decays of the Higgs boson
2012-2014 Development of dedicated triggers for long-lived particles
2012-2013 Measurement of the $t\bar{t}H$ cross section in the all-hadronic final state
2010-2012 Design of the trigger menu and developments of trigger algorithms
2010-2012 Measurement of the top cross section in the all-hadronic final state
2009-2010 Measurement of the first inclusive b -jet cross section measurement at the LHC
2007-2010 Track reconstruction and b -tagging algorithms for the ATLAS trigger system
2007-2009 Track reconstruction studies using cosmic muon rays and first collision data

Research Coordination

- 2020 - 2022** Coordinator of physics activities for ATLAS Italy
2016 - 2018 Convener of the ATLAS flavour tagging group
2015 - 2016 Trigger coordinator in the ATLAS exotics group
2015 - 2016 Convener of the ATLAS flavour tagging calibration group
2013 - 2015 Convener of the ATLAS “Unconventional signatures and Exotic Higgs” physics analysis group
2013 - 2015 Trigger coordinator in the ATLAS top group
2010 - 2012 Convener of the ATLAS b -jet trigger group
2010 - 2016 Member of the ATLAS trigger menu coordination group

Scientific Committees

- 2017** Organising committee of the ATLAS flavour tagging workshop
since 2015 Journal editor for Advances in High Energy Physics [\[link\]](#)
Oct 2014 Organising committee of the ATLAS workshop on BSM Higgs searches

Research Outputs

As member of the ATLAS collaboration since 2007, I am author of >1000 publications. Complete list of publications can be found on [Inspire](#)

Famous papers	citations > 250	120
Known papers	100 < citations \leq 250	350
Other papers	citations \leq 100	650
h _{HEP} index		190

Ten Selected Research Outputs

1. A. Coccaro et al., “*Tagging the Higgs boson decay to bottom quarks with colour-sensitive observables and the Lund jet plane,*”, [Eur. Phys. J. C **82** \(2022\) no.5, 493](#)
2. ATLAS Collaboration, “*Measurements of b-jet tagging efficiency with the ATLAS detector using $t\bar{t}$ events at $\sqrt{s} = 13$ TeV*”, [JHEP **08** \(2018\) 089](#)
3. ATLAS Collaboration, “*Observation of $H \rightarrow b\bar{b}$ decays and VH production with the ATLAS detector*”, [Phys.Lett. **B786** \(2018\) 59-86](#)
4. ATLAS Collaboration, “*Search for resonances in the mass distribution of jet pairs with one or two jets identified as b-jets in proton-proton collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector*”, [Phys.Lett. **B759** \(2016\) 229-246](#)
5. A. Coccaro, D. Curtin, H. Lubatti, H. Russell, J. Shelton, “*Data-driven Model-independent Searches for Long-lived Particles at the LHC*”, [Phys. Rev. **D 94**, 113003 \(2016\)](#)
6. ATLAS Collaboration, “*Search for long-lived, weakly interacting particles that decay to displaced hadronic jets in proton-proton collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector*”, [Phys. Rev. **D92** \(2015\) 012010](#)
7. ATLAS Collaboration, “*Triggers for Displaced Decays of Long-lived Neutral Particles in the ATLAS Detector*”, [JINST **8** \(2013\) P07015](#)
8. ATLAS Collaboration, “*Performance of the ATLAS Trigger System in 2010*”, [Eur.Phys.J. **C72**, 1849 \(2012\)](#)
9. ATLAS Collaboration, “*Measurement of the inclusive and dijet cross-sections of b-jets in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector*”, [EPJC **71** \(2011\) 1846](#)
10. ATLAS Collaboration, “*The ATLAS Inner Detector commissioning and calibration*”, [Eur. Phys. J. **C70** \(2010\) 787-821](#)

Contributions to Conferences

1. A. Coccaro, *Searches for BSM physics using challenging and long-lived signatures with ATLAS*, Kruger 2022, South Africa
2. A. Coccaro, *The FASER experiment at the LHC*, Lomonosov 2021, Russia
3. A. Coccaro, *Latest results from ATLAS on dark matter searches with Higgs tagging*, PPC 2019, Colombia
4. A. Coccaro, *Searches for new phenomena in di-jet events with the ATLAS detector*, ICHEP 2018, South Korea
5. A. Coccaro, *Qualification measurements of INFN-FBK 3D modules*, 13th Trento workshop on advanced silicon radiation detectors, Germany
6. A. Coccaro, *Searches for long-lived particles*, Dark Matter at LHC workshop 2017, University of California USA
7. A. Coccaro, *Decays to dark sector particles at ATLAS*, Dark Interactions 2016, Brookhaven National Laboratory USA
8. A. Coccaro, *Trigger Strategies for long-lived particles*, LHC searches for long-lived BSM particles, University of Massachusetts USA (2015)
9. A. Coccaro, *Exotic searches with ATLAS*, La Thuile 2015
10. A. Coccaro, *Looking for dark matter in exotic Higgs decays at the LHC*, From Higgs to Dark Matter 2014, [Cogent Physics \(2015\), 2: 1054679](#)
11. A. Coccaro, *Searches for long-lived particles and lepton-jets with the ATLAS detector* Pheno 2013
12. A. Coccaro, *Fully hadronic $t\bar{t}$ with the ATLAS detector*, TOP 2012, [J.Phys.Conf.Ser. 452 \(2013\) 012045](#)
13. A. Coccaro, *Track Reconstruction and b-Jet Identification for the ATLAS Trigger System*, ACAT 2011, [J.Phys.Conf.Ser. 368 \(2012\) 012034](#)
14. A. Coccaro (on behalf of the ALICE, ATLAS, CMS and LHCb Collaborations), *Review of LHC results on onia*, SM@LHC 2011
15. A. Coccaro, *Usage of vertex detectors in the ATLAS trigger software*, [PoS VERTEX2009 \(2009\) 038](#)
16. A. Coccaro, A. Lowe, F. Parodi, C. Schiavi, A. Schwartzman, *Performance and Strategies of the b-Jet Selection for the ATLAS High-Level Trigger*, [IEEE Trans. Nucl. Sci. 56 \(2009\) 2549-2553](#)
17. A. Coccaro, *Online track reconstruction for the ATLAS experiment: strategies and first results with cosmic rays*, SIF, Italian Society of Physics (2008)