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## Andrea Coccaro

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### Personal Information

**Born**                      Nov 04, 1982  
**Nationality**            Italian  
**Family status**        Married, three children

### 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 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	100
Known papers	100 < citations $\leq$ 250	300
Other papers	citations $\leq$ 100	650
h <sub>HEP</sub> index		179

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