Lorenzo Feligioni

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Lorenzo Feligioni is a CNRS/IN2P3 researcher at Centre de Physique de Particules de Marseille (CPPM), within the Aix-Marseille University (AMU), since 2008. He received his Laurea diploma in Physics at the University of Perugia with a theoretical work on Bohm Quantum Mechanics. He moved to Boston University where he obtained his PhD working on the DØ experiment, located at the Tevatron accelerator at Fermi National Accelerator Laboratory (FNAL), Batavia, Illinois. During his PhD at DØ he performed a search for techniparticles in events with one electron and b-jets. He started his post-doc within the ATLAS-CPPM group in 2006, where he coordinated the $t\bar{t}H(H \to b\bar{b})$ sensitivity study for the Computing System Challenge (CSC) effort. At that time he also worked with the Flavour Tagging Group on the preparation of the first ATLAS data-driven b-tagging efficiency calibration. Since the Run 1 LHC data-taking, he has been one of the leading figures behind the trigger-level b-tagging. He led several analyses on a broad spectrum of physics subjects, from top quark measurements to Higgs and Supersymmetry (SUSY) searches. Since 2013 he has been contributing steadily to the CPPM involvement in the French Excellence Initiatives, through AMU (A∗midex), first with the Labex *Origines Constituants et EVolution de l'Univers* (OCEVU) and then with the *Institut de Physique de l'Univers* (IPhU), where he has been coordinating the Particle Physics working group for both OCEVU and IPhU and part of the executive bodies. In 2017 he received his Habilitation à Diriger la Recherche (HDR). Since 2014 he has been the PI of a mixed theory and experiment collaborative projects, funded by A∗midex, which initiated several original data analyses and phenomenological investigations. He is currently coordinating an ATLAS effort to reinterpret Run 2 SUSY analyses in terms of constraints on R-Parity Violating models.

Education, Career

HDR (AMU)	December 2017
CNRS Resarcher (Chargé de Recherche Classe Normale)	October 2008
Post-doc/CDD de haut niveau, CNRS/IN2P3/CPPM (ATLAS group)	January 2006
PhD, Boston University (DØ group)	January 2006
Laurea in Fisica (110/110), Università di Perugia	May 1999

Activities at Hadron Colliders

ATLAS: Served on 14 Editorial Boards, chairing two, direct contribution to eight ATLAS published results. Analysis contact and/or editor of six publications, two of which are in preparation. Convenership of the b-jet trigger group (2012–2014), responsible of b-jet trigger monitoring during Run 2-3. Calibration of offline (Run 1) and online (Run 2) b-tagging algorithms. Implementation of μ-jet trigger chains for Run 3. Member of LAr calorimeter DQ assessment team for Run 3. DØ: Commissioning of SVT b-tagging algorithms. Online beam spot measurement. FNAL Main Injector: Emittance growth monitor.

Responsibilities

- Student supervision: director/co-director of four PhD theses and eight Master diploma internships. Responsible for three post-docs. Member of one HDR and four PhD thesis committees.
- AMU: *Codirection of the IPhU Particle Physics working group at Institut de Physique de l'univers - IPhU* (2020–present), *Member of IPhU Research Board* (2020–present), *Direction of the Particle Physics working group of the Labex OCEVU* (2014–2019), *Member of Labex Executive Committee (ComEx)*, (2014–2019)
- Grants: *Low at LHC*, A∗midex (2023-2025), PI of *BSM Physics at the Terascale*, IPhU, (2019 – present), PI of *Probing the Electroweak Symmetry Breaking with the ATLAS detector (PESBLADe)*, OCEVU (2013 – 2019), PI of *Search for new physics in top quark events with the ATLAS experiment*, France-Stanford Center for Interdisciplinary Studies (2011 – 2012)

Teaching and Scientific Animation

- Teaching: *Introduction to Particle Physics for engeneers* (30 hrs) École Centrale Marseille (2009-2010); *Advanced statistical methods for high energy physics: module on data analysis* (8 hrs) École Doctorale Physique et Science de la Matière (AMU) (2021-present)
- Research coordination: *IRN Terascale*, CPPM representative (2022–present); *TOP-LHC France*, CPPM representative (2015–present); *Physics ATLAS France*, CPPM representative (2009–2011)
- Seminars, workshops organization: LOC of *IRN Terascale* Workshop, Luminy (2023); *IPhU Particle Physics Topical Seminars* (2019–present); LOC of *TOP-LHC France* Workshop, CPPM (2017); *CPPM weekly seminar organization* (2016–2018); LOC of *ATLAS HTOP workshop*, Marseille (2017); LOC of *Frontiers of Fundamental Physics 14*, Marseille (2014); LOC of *Physics ATLAS France* Workshop, CPPM (2009)

Publications

> 1215 refereed, (about 180k citations in total with an average of 150 citations/paper). H-index impact of 192 (from inspirehep.net): 45 renowned paper, 81 famous papers (250-499 citations), 351 very well-known papers (100-249 citations), 362 well-known papers (50-99 citations), 312 known papers (10-49 citations).

Recent and main ten publications

1. ATLAS Collaboration *Configuration and performance of the ATLAS b-jet triggers in Run 2*, Eur. Phys. J. C 81 (2021) 1087
2. ATLAS Collaboration *Search for phenomena beyond the Standard Model in events with large b-jet multiplicity using the ATLAS detector at the LHC*, Eur. Phys. J. C 81 (2021) 11
3. S. Diglio, LF, G. Moultaka, *Stashing the stops in multijet events at the LHC*, Phys. Rev. D **96**, 55032 (2017)
4. ATLAS Collaboration *Search for the Standard Model Higgs boson decaying into $b\bar{b}$ produced in association with top quarks decaying hadronically in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector*, JHEP 05 (2016), p. 160
5. ATLAS Collaboration *Performance of b-Jet Identification in the ATLAS Experiment*, JINST **11** 04 (2016)
6. ATLAS Collaboration *Measurement of the $t\bar{t}$ production cross section in the all-hadronic channel in ATLAS with $\sqrt{s} = 7$ TeV data*, ATLAS-CONF-2012-031
7. ATLAS Collaboration *Search for $t\bar{t}H(H \to b\bar{b})$* CERN-OPEN-2008-020 p. 1333
8. DØ Collaboration *Search for Techniparticles Decaying into e+jets at DØ,* Phys. Rev. Lett. **98**, 221801 (2007)
9. DØ Collaboration *b-Jet Identification in the D0 Experiment*, Nucl. Instrum. Meth. A620 (2010)
10. T. Adams, et al., *The D0 Run II Impact Parameter Trigger*, arXiv: physics/0701195v1

Recent and main five conference talks

1. *Recent searches for new phenomena with the ATLAS detector*, on behalf of ATLAS collaboration. TeV Particle Astrophysics (TeVPA) 2023, 11-15 September 2023, Naples, Italie.
2. *Exploring the frontier of R-parity-violating supersymmetry with the ATLAS detector*, on behalf of ATLAS collaboration. SUSY 2021, 28^{th} International Conference on Supersymmetry and Unification of Fundamental Interactions, 23-28 August 2021, Beijing, China.
3. *Searches for $t\bar{t}$ resonances with the ATLAS detector at the LHC*, on behalf of ATLAS collaboration. SUSY 2015, 23^{rd} International Conference on Supersymmetry and Unification of Fundamental Interactions, 23-29 August 2015, Lake Tahoe, California.
4. *4th generation searches at ATLAS*, on behalf of ATLAS collaboration. 36^{th} International Conference for High Energy Physics, 4-11 July 2012, Melbourne, Australia. *PoS(ICHEP2012) 560.*
5. *Higgs at LHC*, on behalf of ATLAS and CMS collaborations. 21^{st} International Workshop on Weak Interactions and Neutrinos, January 2007. Kolkata, India.