Marina Cobal

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Short CV

I am currently Full Professor of Physics at the University of Udine, Italy, where I have been employed since 2001, and an Associate Member of INFN. Previously, I held research positions at CERN in Geneva, Switzerland, as a Fellow and Staff Member (1995–2001), as well as at Fermilab in Chicago, USA (1994).
As an experimental physicist, my research has primarily focused on particle physics, conducted within the framework of scientific projects supported and funded by INFN. My main interest lies in fundamental research in sub-nuclear physics using particle accelerators. I have been a member of the CDF collaboration and, later, the ATLAS and FCC collaborations.
I am the author of approximately 1,314 scientific papers, with an h-index of 142 (Scopus, April 2025).

Education and Positions

Full Professor | *University of Udine, IT*	2018-present
Visiting Professor | *ICTP Trieste, IT*	2015-present
Associate Professor | *University of Udine, IT*	2010-2018
Researcher | *University of Udine, IT*	2001-2010
Staff (EP Division) | *CERN, CH*	1998-2001
PostDoc | *University of Udine, IT ,*	1997-1998
Fellow (PPE Division) | *CERN, CH*	1995-1997
Guest Scientist | *Fermilab, USA*	1994-1995
Ph.D. in Physics (CDF experiment) | *University of Pisa, IT*	1994
MSc in Physics (VIRGO experiment) | *University of Pisa, IT*	1990

Research Activity

FCC Collaboration 2018 - Present

Analysis studies focused on the search for New Physics beyond the Standard Model, including investigations in top physics and dark-matter searches at future circular colliders. Additionally, I contributed to the editing of the FCC Conceptual Design Reports and co-authored a paper published in Physical Review D.
Main publications:
Volume 1: Physics, Experiments, Detectors, CERN-FCC-PHYS-2025-0002, https://cds.cern.ch/record/2928193; What Next: *White Paper of CSN1 - Proposal for a long-term strategy for accelerator-based experiments*, Frascati Phys. Ser. 60 (2015) pp. 1-291, ISBN 978-88-864-0999-5 and DOI: 10.1103/PhysRevD.102.035027, 10.1140/epjst/e2019-900087-0, 10.1140/epjst/e2019-900045-4, 10.1140/epjc/s10052-019-6904-3 .

1995 - Present **ATLAS Collaboration**

Contributions in the field of physics data analysis: leadership of several analyses, editor of internal notes and papers (28 EdBs), coordinator of the international group of top quark cross-section studies. Involvement in many Standard Model and non-Standard Model analyses (Top, Supersimmetry and Higgs). Chairing and membership of several editorial boards for ATLAS publications.
Main publications DOI:10.1103/PhysRevD.97.072016, 10.1140/epjc/s10052-012-2039-5, 10.1140/epjc/s10052-011-1577-6, 10.1016/j.physletb.2011.12.055

Involvement in the development and operation of the ATLAS Silicon Pixel tracker and its upgrade. Coordination of the silicon sensors tests in Udine and of the beam test of detector prototypes. Contribution to the online monitoring system used during these tests.
Main publications DOI: 10.1016/S0168-9002(02)00557-0, 10.1088/1748-0221/3/07/P07007, 10.1016/j.nima.2012.03.048

Authorship of several ATLAS pre-data studies with Monte Carlo simulation centered on the identification and study of the top quark in the experiment; coordination of an international working group on top physics for several years.
Main publications: *ATLAS detector and Physics performance Technical Design Report*, ISBN: 9290831413 (1999) DOI:10.1103/PhysRevD.71.073003, 10.1140/epjc/s10052-011-1577-6

Contributions to the construction, test and data analysis of the hadron calorimeter and its prototypes (responsibility of the test beam data taking program of the data acquisition system and of the online software). Responsibility of the tests and data analysis of the first prototype of combined ATLAS calorimetry (electromagnetic+hadronic prototypes). Editor or co-editor of several papers on these subjects (1995-2001).
Main publications: *RD34 final Status Report*, CERN-DRDC-94-12 (1994),*ATLAS Tile Calorimeter Technical Design Report*, CERN-LHCC-96-042, ISBN: 9290830913 (1996), DOI: 10.17182/hepdata.47726, 10.1016/S0168-9002(97)00331-8, 10.1016/S0168-9002(97)00075-2, 10.1016/S0168-9002(99)01020-7, 10.1016/S0168-9002(00)00153-4, 10.1007/s100520100645

CDF Collaboration 1990 - 1994

Contribution to the search and discovery of the top quark, the last fundamental particle predicted by the Standard Model, whose first signal was presented in the PhD thesis which was then rewarded with the Scientific Award received in 1994 by the Italian Physics Society.
Main publications D0I: 10.1103/PhysRevLett.73.225, 10.1103/PhysRevLett.73.225, 10.1103/PhysRevD.52.R2605, 10.1103/PhysRevLett.74.2626, 10.1103/PhysRevD.51.4623, 10.1103/PhysRevD.52.R2605

R&D activity for the upgrade of the CDF Forward Calorimeter (1991-1993)
Main publication DOI:10.1016/0168-9002(93)90389-Y

Leadership and Scientific Responsibilities

Coordinator of the ATLAS Udine/ICTP group (12-14 researchers (2023 - 2025)

Member of the International FCC Steering Committee (2021 - present)
Plan activities for the future circular collider in Europe. It includes the CERN directorate (including Prof. Fabiola Giannotti and five other members from the biggest worldwide high-energy physics laboratories. (https://twiki.cern.ch/twiki/bin/view/FCC/InternationalSteeringCommittee)

Representative for Italy in the European Committee for Future Accelerators (ECFA) (2021 - present)

Representation of the views of the high-energy physics community of my country in the ECFA (https://ecfa.web.cern.ch/plenary-ecfa-composition)

INFN contact for the Gruppo Collegato Udine (2021 - present)
https://www.ts.infn.it/pub/sedi/udine

Vice-President and CdA member of the "Fondazione Internazionale Trieste" (2021 - present)
https://www.fondazioneinternazionale.org/

Coordinator of the ATLAS experiment in Italy(>250 researchers) (2015 - 2019)
Organization of all activities of the Italian community in the ATLAS experiment, responsible for the management of the INFN budget allocated to the experiment, link person to the ATLAS international management and the CERN directorate.

Member of the International ATLAS Physics Office Committee (2012 - present)

Coordinator of the ATLAS Udine/ICTP group (12-14 researchers) (2006 - 2021)

Coordinator of the ATLAS top cross-section working group (100 researchers) (2008 - 2010)

INFN Coordinator of the ATLAS experiment phyics groups (2009 - 2010)
Organization of all research activities for the Italian community in the ATLAS experiment

Coordinator of the international ATLAS simulation strategy group (2007 - 2009)

Member and Chair of the international ATLAS Authorship Committee (2006 - 2009)

Member of the international ATLAS Publication Committee (2006 - 2008)

Member and Chair of the international ATLAS Speakers Committee (2003 - 2009)

Coordinator of test beam activities (2003 - 2009)
for the ATLAS first full calo and for the Pixel detector prototypes

Physics coordinator at the test beam of the ATLAS hadron calorimeter (2003 - 2005)

Coordinator of the international ATLAS top-quark physics group (1999 - 2005)

Prizes and Awards

"Premio Laura Bassi"
National Prize for Scientific Career Achievements from SIF (Società Italiana di Fisica), 2024.

"Premio Donne che ce l'hanno fatta"
National Prize for Scientific Career Achievements from Sportello Donna and Stati Generali delle Donne, University of Pavia, 2019.

FFABR ANVUR/MIUR
Award grant, Italian Ministry of Education and Culture, in recognition of the research activity of the previous 3 years(3 kEuro), 2018.

"Premio Paul Harris Fellow"
Prize from Mestre Rotary Cub, for the outreach activity conducted in Friuli Venezia Giulia, Venice IT, 2017.

Premio Operosità Scientifica
National prize from SIF, for the results presented in the Ph.D. thesis, which showed the first evidence of the top-quark signal at the CDF experiment, 1994.

Grants

Bando a cascata PNRR, ICSC Spoke 2

2024-2025: budget 110 kEuro for the project "Dark Siever" devoted to the search for dark quarks in hadron colliders through the identification of 'boosted' jets with machine learning techniques.

"Future Energy Park" UniUD

2025-2026: budget 60 kEuro from Fondazione Friuli for the project "Future Energy Park" devoted to realize a technological park focused on renewable energies and sustainability.

2023-2024: budget 60 kEuro from Fondazione Friuli for the project "Future Energy Park" devoted to realize a technological park focused on renewable energies and sustainability.

"Piano Strategico di Ateneo" UniUD

2022-2024: budget 30 MEuro for the project o a new gassifier for waste biomasses.

2016-2018: budget 40 Meuros for the SIER project, Scuola di Introduzione alle Energie Rinnovabili.

Talks

Invited talks and seminars at national and international conferences (between 1995 and 2025).

1. Experimental perspective for Future Colliders, LFC24 undamental Interactions at Future Colliders, SISSA, Trieste, 2024.
2. Il progetto Future Energy Park a Udine, 110^o Congresso SIF, Bologna, 2024.
3. ATLAS results on Dark Matter, Cosmology 2023 in Miramare, Trieste, 2023.
4. Nuovi risultati da un innovativo gassificatore per biomasse povere, 109^o Congresso SIF, Salerno, 2024.
5. Status of detector requirements for FCC-ee, ICHEP, Bologna, 2022.
6. Un nuovo gassificatore per biomasse povere, 108^o Congresso SIF, Milano, 2022.
7. Review dei più recenti risultati al Large Hadron Collider, Relazione Generale Sezione 1, 106^o Congresso SIF, telematico, 2020.
8. Top mass results in the ATLAS and CMS experiments, invited talk, 30^o Rencontres de Blois, Blois, France, 2018.
9. Top physics results in the ATLAS and CMS experiments, invited talk, 103^o Congresso SIF, Trento, 2017.
10. Top physics measurements at ATLAS, Les Recontres de Physique de la Valle d'Aoste, La Thuile, 2016.
11. Status report on top mass and couplings measurements, LFC15: physics prospects for linear and other future colliders after the discovery of the Higgs, Trento, 2015.
12. Top mass at ATLAS and CMS, TOP MASS: challenges in definition and determination, LNF, Frascati, 2015.
13. Future prospects for Top Physics, INFN WHAT NEXT, La Biodola, Isola d'Elba, 2014.
14. Top quark and Higgs results at Tevatron and LHC, PORTOROZ 2013: Probing the Standard Model and New Physics at Low and High Energies, 2013.
15. ATLAS Upgrades Towards the High Luminosity LHC: extending the discovery potential, SPIN-Praha-2012, Praga, Repubblica Ceca, 2012.
16. Top quark in ATLAS, Amsterdam Particle Physics Symposium, The Netherlands, 2011.
17. Top quark results in ATLAS, PLHC 2011, Perugia, Italy
18. Top quark results at Tevatron and LHC, PORTOROZ 2011: The Role of Heavy Fermions in Fundamental Physics, 2011.

19. Top physics in ATLAS: the early days and afterwards, TOP09, CERN, Svizzera, 2009.
20. Top Cross Section measurement at LHC, TOP2008, Elba, Italia 14, 2008.
21. Top physics at the LHC, IFAE 2008, Bologna, 2008.
22. Collider Physics: from Tevatron to LHC, IX International Symposium of Frontiers in Fundamental and Computational Physics, Udine, 2007.
23. L'esperienza delle Masterclass in fisica delle particelle, Comunicare Fisica, 2007.
24. The top quark from LHC to ILC, Workshop ILC in Florence, Istituto Galilei, Firenze, 2007.
25. Nuova fisica in eventi di top ad LHC, IFAE, Pavia, 2006.
26. Commissioning with Physics for the ATLAS detector, invited seminar at the Kings College Cambridge, UK, 2005.
27. Commissioning with Physics for the ATLAS detector, invited seminar at RHUL, London, UK, 2005.
28. Top physics prospects at the LHC and LC Collider, HC2004, Michigan University, USA, 2004.
29. Top physics at the LHC, Journees Physique Atlas France, La Londe les Maures, France, 2004.
30. Fisica elettrodebole ad LHC, IFAE, Torino, 2004.
31. Top physics at LHC, Linear Collider Workshop, Obernai, Strasburgo, 1999.
32. Combined calorimetry test beam results in ATLAS, CALOR99, VIII International Conference on Calorimetry in High Energy Physics, Lisbon, Portugal, 1999.
33. CDF results on Top, S. Miniato Topical Seminar on The Irresistible Rise on the Standard Model, S. Miniato, 1997.
34. The ATLAS Tilecal hadron calorimeter, International Conference on Advanced Technology and Particle Physics, Como, 1996.
35. Top physics at CDF in Run II, LXXXII Meeting SIF, 1996.
36. Top physics at the LHC, XI Topical Workshop on pp Collider Physics, Abano Terme, 1996.
37. Invited Seminar: The ATLAS Tile Hadron Calorimeter at the University of Pisa, 1996.
38. CERN PH Seminar, Kinematical Top Analysis at CDF. 33. 1995: Kinematic Top Analysis at CDF, Moriond Hadron Conference, Moriond, France, 1995.
39. Kinematical study for the top quark search in the single lepton channel, LXXX Meeting SIF, 1994.
40. The top discovery, invited seminar at SISSA (Trieste) and at the University of Genova, 1994.
41. New particle searches at CDF, EPS Conference, Marseille, France, 1993.

Scientific Organization of Workshops/Conferences/Schools

Cosmology 2023 Workshop, Miramare, Trieste, IT, 2023.

11 editions of the SIER school (School of Introduction to Renewable Energies, Udine, IT, 2017-2025.

16 editions of the ATLAS Italia Workshop, several sites, IT, 2007-2025.

Summer school on Particle Physics for Chinese students, Udine, 2019.

Conference on "Interpreting the LHC Run-2 data", ICTP, Trieste, IT, 2018.

Summer school on Particle Physics for Chinese students, Udine, 2018.

Cosmology 2018 Workshop, Dubrovnik, HR, 2018.

VII Workshop Italiano sulla fisica pp a LHC, Pisa, IT, 2016.

INFN Workshop on Future Detectors for HL-LHC, Trento, IT, 2014.

XII Int. Symposium on Frontiers for Fundamental Physics and Computation, Udine, IT, 2011.

Joint ICTP-INFN-SISSA Conference: "Topical Issues in LHC Physics, ICTP, Trieste, IT, 2011.

IX Int. Symposium on Frontiers for Fundamental Physics and Computation, Udine, IT, 2008.

Workshop sui Monte Carlo, la Fisica e le Simulazioni a LHC (edition IV), Frascati, IT, 2008.

Workshop Top2006, Coimbra, PT, 2006.

Institutional Responsibilities

Member of the Academic Board of the Ph.D. program in Mathematics and Physics at the University of Udine (2021-today).

Coordinator of the Physics Laboratories of the Polytechnic Department of Engineering and Architecture in the University of Udine (2017-today).

Director of the Introductory School on Renewable Energies SIER at the University of Udine (2015-today).

Member of the Quality Committee (SUA-RD) of the Department of Chemistry and Physics at the University of Udine (2014).

Member of the Academic Board of the PhD program in Industrial and Computer Engineering at the University of Udine (2009-2021).

Reviews, Editing, Membership in juries/committees

Referee for the European HORIZON-EIC-2024-PATHFINDEROPEN program (2022-2025)
Referee for the European H2020-FET OPEN RIA Call program (2016-2020).
Member of the jury for the National Thesis prize "Conversi" (2020).

Member of the jury for the National Thesis prize "Con.Scienze" (2020).

Participation to many committees for researcher/professor/director positions in several national Universities and laboratories (2018-2025).

Member of many Ph.D. jury in Italy and abroad (2014-2022).

Member of the jury for admission to the Scuola Superiore Classe Scientifico-economica of the University of Udine (2011 and 2015).

Remote expert evaluator of the Horizon2020 program (2013-2014).

Referee for the ETAG (Estonian Research Council) for physics project at the LHC accelerator (2013).

Teaching

Courses during the current academic year:

Fundamental Particles and Interactions (48h, 8 CFU), MSc in Mathematics, University of Udine

Physics I (48h, 8 CFU), BSc in Electronic Engineering, University of Udine

Physics I (48h, 8 CFU), BSc in Industrial Engineering for Sustainability, University of Udine

Experimental Nuclear and Subnuclear Physics (48h, 8 CFU), MSc in Physics, University of Trieste (Laurea Interateneo Trieste-Udine).

Supervision of Students

From 2001 to present, supervision of: **10 Ph.D., 16 BSc and 18 MSc students**, from the University of Udine and Trieste.

Outreach

Several **events, seminars, and round tables** organized every year for schools and the general public on various topics of high-energy physics (including future accelerators).

Organization of **special days in Udine in the occasion of the Higgs discovery**.

Responsible of the organization of the **IPPOG Masterclasses** in HEP in Udine for more than 15 years.

Organizer of a **yearly visit at CERN** for Physics and Engineering students from Udine and Trieste Universities since 2007.

Books

Esercizi di fisica, D. Cauz, M. Cobal e C. del Papa, ISB 88-8420-238-8, Editrice Forum, 2004.
Esercizi di fisica, D. Cauz, M. Cobal e C. del Papa, ISB 88-8420-238-8, Editrice Forum, 2003.

Languages

Italian (native)
English (fluent)
German (conversational level)
French (conversational level).