

Fabrizio Caola

Rudolf Peierls Centre for Theoretical Physics
Department of Physics, University of Oxford
Clarendon Laboratory, Parks Road
Oxford OX1 3PU

Phone: +44-(0) 1865-213978
E-mail: fabrizio.caola@physics.ox.ac.uk

Personal

Born on February 14, 1983

Nationality: Italian

Positions Held

Since Aug. 2024: Full Professor, University of Oxford, and Tutorial Fellow in Physics, Wadham College

Jan. 2019 – Aug. 2024: Associate Professor, University of Oxford, and Tutorial Fellow in Physics, Wadham College

Oct. 2016 – Dec. 2018: Assistant Professor, IPPP Durham

Nov. 2014 – Oct. 2017: Fellow, CERN Theory Division

(Jan. 2017 – Oct. 2017: *on leave from Durham University*)

Jul. 2014 – Nov. 2014: Visiting Fellow, Karlsruhe Institute of Technology, TTP

Aug. 2011 – Jul. 2014: Post-Doctoral Fellow, Johns Hopkins University

Jan. 2011 – Jul. 2011: Fulbright Visiting Student Researcher, Fermilab

Education

Ph.D. Physics, Università di Milano and INFN, July 2011

Ph.D. Thesis: *High-Energy Resummation in Perturbative QCD: Theory and Phenomenology*

Advisor: Prof. Stefano Forte

M.S. Physics (*Laurea Magistrale*) , Università di Milano, October 2007

Master Thesis: *Geometric scaling in perturbative QCD*

Advisor: Prof. Stefano Forte

Mark: 110/110 *cum laude*

Concert Pianist Degree, Conservatorio di Musica G. Verdi di Milano, July 2007

Advisor: M. Paolo Bordoni

Mark: 10/10

B.S. Physics (*Laurea Triennale*) , Università di Milano, October 2005

Thesis: *Fenomenologia della funzione di struttura F_2 per il protone a piccolo x*

Advisor: Prof. Stefano Forte

Mark: 110/110 *cum laude*

Research Grants and Awards

ERC Consolidator Grant PRECSM, 1.999.931 EUR, 2024-2029, managed by UKRI

ERC Starting Grant HIPQCD, 1.497.016 EUR, 2019-2024

GUIDO ALTARELLI AWARD, *for seminal contributions to deep-inelastic scattering and perturbative QCD which have spurred new experimental measurements and new theoretical insights in the physics of fundamental interactions*, 2016

MARTIN AND BEATE BLOCK AWARD, ASPEN CENTER FOR PHYSICS, 2016

FULBRIGHT VISITING STUDENT RESEARCHER FELLOWSHIP, 2010

Premio Galluzzi per la Fisica, 2008, AWARDED BY THE UNIVERSITY OF ROMA 3. NATIONAL-LEVEL PRIZE FOR ACADEMIC EXCELLENCE IN PHYSICS

Research Interests

QCD and collider phenomenology

Scattering amplitudes and higher-order computations

Resummation and all-order results in QFT

Publication List

An always up to date list of all my publications, including citations information, can be found on the INSPIRE Data system at the following address

<http://inspirehep.net/search?p=author%3AF.Caola.1%20AND%20collection%3Aciteable>

It is customary in my field to list authors in alphabetical order.

Teaching Experience

Tutorial teaching, Wadham College: Quantum Mechanics (since 2019), Mathematical Methods (since 2020), Nuclear and Particle Physics (since 2021), Electromagnetism (2020), Optics (2019)

Since 2020: Standard Model and Beyond I, Oxford Master Course in Mathematical and Theoretical Physics

2023-24: Introduction to QCD, DPhil Programme in Particle Physics

2018: Mathematical Methods for Physics (part II), B.S. level course, Durham University

2017: Relativistic Quantum Mechanics, B.S. level course, Durham University

2016 – 2017: Quantum Electrodynamics, M.S. level course, Durham University

2008 – 2011: Theoretical particle physics (Teaching Assistant). *M.S. level course of Prof. S. Forte*

2010 – 2011: Quantum Mechanics (Teaching Assistant). *B.S. level course of Prof. S. Forte*

2010 – 2011: Introductory Mathematics. *Independent instructor, undergraduate course for Biology freshmen*

Graduate student supervision

M. Danner, starting in October 2025

M. Link, since 2024

R. Grabarczyk, since 2022, co-supervised with C. Gwenlan and G. Salam

G. Gambuti, (2024), co-supervised with L. Tancredi. ETH Fellow (from October 2025)

F. Devoto (2024). Now a PostDoc at SLAC

P. Bargiela (2023). Now a PostDoc at the University of Zürich

Organization of scientific meetings

Scientific Advisory Committee, “*Amplitudes*” conference series, 2023, 2025

International Organising Committee, “*Higgs*” conference series, since 2019

International Advisory Committee, “*Top*” conference series, 2017-2018

Local Advisory Committee, “*CERN-Fermilab HCP Summer School*”, 2017

Organizer, “*High Time for Higher Orders: From Amplitudes to Phenomenology*”, MITP Scientific Program, Mainz, 13-24 Aug. 2018

Organizer, “*Amplitudes - practical and theoretical developments*”, MITP Scientific Program, Mainz, 6-17 Feb. 2017

Organizer, “*Future challenges for precision QCD*”, IPPP Durham, 25-28 Oct. 2016

Other professional activities

Governing Body member, Wadham College

Member of the “*Comitato di Indirizzo*” (Steering Committee) of the Physics PhD programme at the University of Milano, since 2023

Steering Committee member, LHC Higgs Working Group, since 2021

LHC Higgs Cross Section Working Group 1 theory convenor, 2017-2021

2017: Theory convenor, “*gluon fusion subgroup*” of the Higgs Cross Section Working Group

2014-2017: Theory convenor, “*Off-shell subgroup*” of the Higgs Cross Section Working Group

Editor, “*Off-shell Higgs Production and Higgs Interference*”, in “*Handbook of LHC Higgs cross sections: 4. Deciphering the nature of the Higgs sector*”, CERN Yellow Report

Theory convenor, “*Higgs*” working group of the 2017 session of the Les Houches Workshop Series “*Physics at TeV Colliders*”, June 2017

Theory convenor, “*Top session*” of the LHCP2015 Conference, St. Petersburg, Sep. 2015

Convenor, “*Hard QCD session*” of the QCD@LHC 2014 Conference, Suzdal, Aug. 2014

Member of the International Advisory and Steering Board of the “*NNPDF*” ERC Advanced Grant (2017-2022, PI: Prof. Stefano Forte)

Referee for Physical Review Letters, Physics Letters B, Nuclear Physics B, Physical Review D, Journal of High Energy Physics, European Physical Journal C

Selected Invited Presentations at International Conferences and Schools

Zurich Phenomenology Workshop, Jan 2025

Lecturer at the *Amplitudes* summer School, Institute for Advanced Study, Princeton, Jun 2024

58th Rencontres de Moriond, La Thuile, April 2024,

Conference theory summary

Amplitudes 2023, CERN, August 2023

LoopFest XXI, SLAC, Menlo Park, June 2023

MIAPbP programme, Gearing up for High-Precision LHC physics, Munich, August 2022

DIS2022: XXIX International Workshop on Deep-Inelastic Scattering and Related Subjects, Santiago de Compostela, May 2022

PANIC 2021, Sep. 2021 [*remote*]

SM@LHC 2021, Apr. 2021 [*remote*]

Annually CMS Italy Meeting, Oct. 2020 [*remote*]
Snowmass Community Planning meeting, Oct. 2020 [*remote*]
3rd FCC Physics and Experiments Workshop, CERN, Jan. 2020
XXVII Epiphany Conference, Krakow, Jan. 2020
Higgs Hunting 2019, Paris, Jul. 2019
European Strategy for Particle Physics, Granada, May 2019
SM@LHC 2019, Zurich, Apr. 2019
46th SLAC summer institute, Menlo Park, 2018
53th Rencontres de Moriond, La Thuile, Mar. 2018
Higgs Maxwell Meeting 2018, “Higgs and Einstein”, Edinburgh, 2018
The XXVIII International Symposium on Lepton Photon Interactions at High Energies, Guangzhou (CHN), 2017
Gordon Research Conference, “Pushing the Frontiers of Particle Physics During the LHC Run II Era”, Hong Kong (CHN), 2017
29th Rencontres de Blois on “Particle Physics and Cosmology”, Blois (FR), 2017
Les Rencontres de Physique de la Vallée d’Aoste XXXI, La Thuile, March 2017
Annual Theory Meeting, Durham, December 2016
Higgs Couplings 2016, SLAC, Menlo Park, November 2016
Into the Unknown with LHC13, UK HEP Forum 2016
Higgs Hunting 2016, Paris, Sep. 2016
QCD@LHC 2016, Zurich, Aug. 2016
LHC Run II and the precision frontier, KITP, Santa Barbara, Mar. 2016
Aspen Winter Conferences, Particle Physics on the Verge of Another Discovery?, Aspen, Jan. 2016
LHC Higgs Cross Section Working Group General Assembly, CERN, Jul. 2015
27th Rencontres de Blois, Blois, Jun. 2015
Standard Model at the LHC 2015, Florence, Apr. 2015
50th Rencontres de Moriond, La Thuile, Mar. 2015
ATLAS (N)NLO MC&Tools Workshop, CERN, Dec. 2014

CMS - Single Top Workshop, Naples, Dec. 2014, *Theory overview talk*

KEK Flavor Factory Workshop / Belle II Theory Interface Platform Meeting, KEK, Tsukuba, Oct. 2014

Top2014, Cannes, Sep. 2014, *Single-top theory overview talk*

Topical workshop on top differential distributions, Cannes, Sep. 2014

Annual CMS Germany meeting, Aachen, Sep. 2014, *Theory plenary talk*

Top Quark Physics Day, MIAPP, TU Munich, Aug. 2014

LoopFest XIII, CUNY, Brooklyn, Jun. 2014

Top LHC Working Group Meeting, CERN, May 2014

QCD tools for LHC physics: from 8 to 14 TeV - what's needed and why?, CTEQ workshop, Fermilab, Batavia IL Nov, 2013

EPS-HEP 2013, Stockholm, Jul. 2013

Physics at TeV colliders, Les Houches, Jun. 2013

LoopFest XII, Florida State University, Tallahassee FL, May 2013

Selected Workshops and Research Visits

What is Particle Theory?, KITP Santa Barbara, March-April 2025

Tightening the Gap Between Scattering Amplitudes and Events at the LHC at Higher Orders, Aspen Center for Physics, August 2024

Gearing up for High-Precision LHC physics, MIAPbP programme, August 2022

New Physics from Precision at High Energies, KITP Santa Barbara, Mar. – May 2021 [remote]

Physics at the LHC and Beyond, CERN Theory Institute, CERN, July 2018

Mathematics and Physics of Scattering Amplitudes, MIAPP Munich, Aug. 2017

Automated, Resummed and Effective: Precision Computations for the LHC and Beyond, MIAPP Munich, Aug. 2017

Amplitudes - practical and theoretical developments, MITP Mainz, Feb. 6-17 2017

LHC Run II and the Precision Frontier, KITP, Santa Barbara, Mar.-Apr. 2016

New Analytic Ideas for Loop Integrands: QCD Meets $N=4$ Super Yang-Mills, MITP Mainz, Mar. 2016

Higher Orders and Jets for LHC, MITP Mainz, Jul. 2015

Institute for Advanced Study (IAS), Princeton, Jan. 2015

Physics at TeV Colliders, Les Houches Workshop Series, Jun. 2013

Perturbative higher-order effects at work at the LHC, CERN Theory Institute, CERN, Jun.-Jul. 2010

Language Skills

Mother tongue: Italian

Good knowledge of both spoken and written English and French

Computer Skills

Operating systems: Linux, Mac OS X, Windows

Programming languages: Fortran, C/C++, Mathematica, Python, Maple, Form, LaTeX

Personal interests

Classical music

Contemporary history

Mountaineering