

## Current and Past Roles

Geneva, Switzerland

### Coordinator/Convener Roles

2007 - now

- *Co-convener (L3)* of the CMS Top Quark + X + Bosons Physics Group 2025 – present
- *Coordinator* of the NTU CMS analysis group for extra Yukawa couplings and new Higgs boson searches 2020 – present
- *Co-PI* Decadal Mission for the New Higgs/Flavor Physics Era of NSTC Grant 113-2639-M-002-006 2024 – 2025
- *Co-PI* Search for new Yukawa couplings at the LHC with heavy quarks of NSTC Grant 1110-2112-M-002-017 2021 – 2023
- *Co-convener* of the High Energy Physics Software Foundation (HSF) Physics Generators group 2020 – 2023
- *Co-convener (L2)* of the CMS Monte Carlo Event Generators 2017 – 2019
- *Co-convener (L3)* of the CMS Physics Comparisons and Generator Tunes 2016 – 2017
- *Co-convener (L3)* of the CMS Top Quark Event Modelling Generators 2015 – 2017
- *Co-convener (L3)* of the CMS Top Quark Properties 2013 – 2014
- *Co-convener (L3)* of the CMS Electroweak Dilepton physics group 2010 – 2011
- *Co-coordinator* of the CMS Hadron Calorimeter (HCAL) Data Certification detector group 2009 – 2011
- *Co-coordinator* of the HCAL Prompt Analysis detector group 2008 – 2009

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### Reviewer, Editor, Committee, Consultant Tasks

2007 - now

- *Review Committee Chair (for a CMS top quark analysis)* 2024 – present
- *Review Committee member* for > 20 CMS Higgs, top, and electroweak, and modeling studies 2012 – present
- *Editorial Board Member* of the Physics Section of the *Symmetry (MDPI)* journal 2024 – present
- *Reviewer* for the journals *Particles, Galaxies, and Symmetry (MDPI)* 2025 – present
- *Assessment of self-citations of manuscripts for the Symmetry journal* 2025
- *Co-editor* of the special journal issue *New Higgs-like states in the Symmetry journal* 2024 – present
- *Co-editor* of the special journal issue *Top quark at the new physics frontier in the Universe (MDPI)* journal 2021 – 2024
- *Reviewer* for the journal *Physics of the Dark Universe (ELSEVIER)* 2023
- *Reviewer* for QEIOS for an astrophysics preprint 2023
- *Book reviewer* for CRC press (Routledge) 2022
- *Reviewer* for the *European Physical Journal C* 2019 – 2020
- *Reviewer* for *Physics Letters B (ELSEVIER)* 2017 – 2018, 2020
- *Jury member* for the Ph.D. thesis of Deniz Poyraz (Ghent University) 2018
- *Consultant* for the project *Free electron distribution in the Galaxy, distances to pulsars and magnetic fields of neutron stars (TUBITAK)* 2015 – 2018
- *Jury and the reading committee* for the Ph.D. thesis of Kelly Beernaert (Ghent University) 2015
- *Scientific advisor* for the Turkish translation of the book *Albert Einstein and Relativity for Kids (TUBITAK)* 2015
- *Operations research committee* for *Izmir HEP Workshop; New Physics at the LHC and Turkey-CERN relations* 2013
- *Co-editor* of the Book *Neutron Stars, Supernovae and Supernova Remnants, Nova* 2007

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### Contact person

2007 - now

- *Harmonization of Modeling Uncertainties in ATLAS & CMS Top Quark Measurements in the TOPLHC WG* 2021 – present
- *CMS Event Simulation Sample Verification Script contact* 2019 – present
- *HEP Software foundation Physics Generators Working Group CMS Contact person* 2019 – 2023
- *CMS Top quark conference contact person* 2014 – 2019
- *CMS HCAL contact for global runs, particle flow, and the physics validation team* 2007 – 2011
- *CMS Calorimeter noise contact person in V+Jets group* 2010
- *CMS Physics Validation team contact person for HCAL* 2009 – 2011
- *Data reconstruction/transfer for CMS ECAL/HCAL Test beam 2006 to set up the 1st remote ops. center of CMS* 2007 – 2008

### Conference/Workshop Tasks

2007 - now

- *Co-organizer*, the HSF Event Generator Tuning Workshop, Virtual Jun. 2023
- *Co-organizer*, the MC4EIC 2022, workshop on Monte Carlo event simulation for the EIC, Virtual Nov. 2022
- *Chair*, the parallel session "Standard Model Physics at the TeV Scale" in PANIC2021 Conference, Virtual Sep. 2021
- *Co-organizer*, the HEP Software Foundation Worldwide LHC Computing Grid (WLGC), Virtual Nov. 2020
- *Local organizing committee*, 12th International Workshop on Top Quark Physics, Beijing, China Sep. 2019
- *Chair*, Plenary: FCNC and EFT, 11th International Workshop on Top Quark Physics, Bad Neuenahr, Germany Sep. 2018
- *Organizing Committee/Simulation Session Convener*, CMS Heavy flavour tagging workshop, Brussels, Belgium Apr. 2018
- *Theory and Modeling Session Convener* in TOP@100 fb<sup>-1</sup> Workshop, CERN, Geneva, Switzerland Nov. 2016

## Selected publications (in the last five years)

### Journal papers

- Search for charged Higgs bosons decaying into top and bottom quarks in lepton+jets final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV, *submitted to JHEP*, arXiv:2512.24471 (Dec. 2025)
- Review of top quark mass measurements in CMS, *Phys. Rep.* 1115 (2025) 116
- Top Quark at the New Physics Frontier, Eds. E. Yazgan and P. Silva., (2024) doi.org/10.3390/books978-3-7258-0614-0
- Search for new Higgs bosons via same-sign top quark pair production in association with a jet in proton-proton collisions at  $\sqrt{s} = 13$  TeV, CMS Collaboration, *Phys. Lett. B.* 850 (2024) 138478
- CMS PYTHIA 8 colour reconnection tunes based on underlying-event data, CMS Collaboration, *Eur. Phys. J. C* 83 (2023) 587
- Distances of galactic radio pulsars; first quadrant:  $-2 < \ell < 90$  and  $-2 < b < 2$ , P. Kutukcu, A. Ankay, E. Yazgan, and K. Bozkurt, *Mon. Not. Roy. Astro. Soc.* 511 (2022) 4669
- Challenges in Monte Carlo Event Generator Software for High-Luminosity LHC, A. Valassi, E. Yazgan, J. McFayden et al., *Comput. Softw. Big Sci.* 5 (2021) 12

### Preprints and Proceedings

- Measurements of top quark properties in CMS:  $t\bar{t}$  spin density matrix, quantum entanglement and quantum magic, E. Yazgan, arXiv:2510.13743 (2025)
- Search for charged Higgs bosons decaying into a top and a bottom quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV, CMS Collaboration, CMS-PAS-B2G-24-008 (2025)
- Input to European Strategy Update for Particle Physics: Sustainability, V. Boisvert et al. arXiv:2504.03012 (2025)
- Event Generators for High-Energy Physics Experiments, J. M. Campbell et al. arXiv:2203.11110 (2022 – 2025)
- TF07 Snowmass Report: Theory of Collider Phenomena, F. Maltoni, et al. arXiv:2210.02591, FERMILAB-FN-1203-QIS (2022)
- Modelling the Data at the LHC, E. Yazgan, arXiv:2110.02599, CMS CR-2021/166; PoS (PANIC2021) 410 (2021)
- HL-LHC Computing Review Stage-2, Common Software Projects: Event Generators, E. Yazgan, et al. arXiv:2109.14938 [hep-ph, hep-ex, physics.comp-ph]; FERMILAB-PUB-21-526-OCIO-SCD-T (2021)

[Link to full list of selected publications](#) • [Link to full list of \( \$\sim 1400\$ \) publications](#) • [Link to preprints in arXiv](#)

## Presentations (in the last five years)

### Top quark properties in CMS: $t\bar{t}$ spin density matrix, quantum entanglement, and quantum magic

EPS-HEP CONFERENCE (TALK ON BEHALF OF THE CMS COLLABORATION)

Marseille, France

7 – 11 July 2025

### Searches for Additional Scalar Bosons with the CMS Experiment

HIGGS HUNTING 2024 WORKSHOP (PLENARY TALK ON BEHALF OF THE CMS COLLABORATION)

Paris, France

23 – 25 September 2024

### ATLAS and CMS Top Quark Rare Searches (Flavor Changing Neutral Currents)

STANDARD MODEL AT THE LHC 2024 WORKSHOP (PLENARY TALK ON BEHALF OF THE ATLAS & CMS COLLABORATIONS)

Rome, Italy

7 – 10 May, 2024

### CMS Highlight talk: Search for extra Higgs bosons through same-sign top-quark production in association with an extra jet

LHC TOP WORKING GROUP MEETING (PLENARY TALK ON BEHALF OF THE CMS COLLABORATION)

Fully online workshop

29 Nov – 1 Dec, 2023

### Modelling the data at the LHC

PANIC2021 (22ND PARTICLES AND NUCLEI INTERNATIONAL CONFERENCE (PLENARY TALK ON BEHALF OF THE ATLAS & CMS COLLABORATIONS))

Fully online conference

5 – 10 September 2021

### Harmony between ATLAS and CMS (in systematic uncertainty estimations)

LHC TOP WG MEETING (PLENARY TALK ON BEHALF OF THE ATLAS & CMS COLLABORATIONS)

Fully online workshop

1 – 3, December 2021

### Top Quark Properties

8TH EDITION OF THE LARGE HADRON COLLIDER PHYSICS CONFERENCE (LHCP2020) (PLENARY TALK ON BEHALF OF THE ATLAS & CMS COLLABORATIONS)

Fully online conference

25-30 May 2020

### [Hyperlink to full list of presentations](#)

## Positions

### Research faculty (based at CERN)

NATIONAL TAIWAN UNIVERSITY, TAIPEI, TAIWAN

Geneva, Switzerland

2020 - PRESENT

### Post-doc fellow (based at CERN)

INSTITUTE OF HIGH ENERGY PHYSICS (IHEP), CHINESE ACADEMY OF SCIENCES, BEIJING

Geneva, Switzerland

2016 - 2020

### Post-doc fellow (based at CERN)

UNIVERSITY OF GHENT, BELGIUM

Geneva, Switzerland

2011 - 2016

### Postdoctoral research associate (based at CERN)

TEXAS TECH UNIVERSITY, TX, USA

Geneva, Switzerland

2007 - 2011

### Guest scientist and software developer

FERMI NATIONAL ACCELERATOR LABORATORY (FERMILAB)

Batavia, IL, USA

2005 - 2007

### Research and teaching assistant

MIDDLE EAST TECHNICAL UNIVERSITY (METU)

Ankara, Turkey

2000 - 2007

## Education

### Middle East Technical University with host laboratory: Fermilab

PHD IN PHYSICS

Ankara, Turkey / Batavia, IL, USA

2002 - 2007

- GPA: 3.61/4.00, Mentors: Shuichi Kunori and Dan Green; Thesis: "Search for a Standard Model Higgs Boson in CMS via Vector Boson Fusion in the  $H \rightarrow W^+ W^- \rightarrow \ell^+ \ell^- \nu \bar{\nu}$  Channel and Optimization of Energy Reconstruction in CMS using Test Beam 2006 Data" fermilab-thesis-2007-13.

### Middle East Technical University

MSC IN PHYSICS (SPECIALISATION IN ASTROPHYSICS)

Ankara, Turkey

2000 - 2002

- GPA: 3.56/4.00; Supervisor: S. Balman. Thesis: "Timing Characteristics of Intermediate-Polar Cataclysmic Variables and Data Analysis of YY Draconis"

### Middle East Technical University

BS IN PHYSICS

Ankara, Turkey

1996 - 2000

- GPA: 3.31/4.00; Undergraduate special advanced physics class

## Honors & Awards

**Breakthrough Prize in Fundamental Physics**, awarded to E. Yazgan and colleagues in the CMS

Collaboration at the LHC for detailed measurements of Higgs boson properties confirming the

- 2025 symmetry-breaking mechanism of mass generation, the discovery of new strongly interacting particles, the study of rare processes and matter-antimatter asymmetry, and the exploration of nature at the shortest distances and most extreme conditions at CERN's Large Hadron Collider.

Los Angeles, USA

- 2025 **Exceptional Reviewer 2025**, for the *Symmetry* Journal

Basel, Switzerland

- 2019 **CMS achievement award**, for work in the validation tools for generators and for sample production

Geneva,

Switzerland

- 2018 **Outstanding Contribution in Reviewing**, from the Editors of Physics Letters B

Amsterdam,

Netherlands

- 2013 **European Physical Society High Energy and Particle Physics Prize**, awarded to the CMS Collaboration for the discovery of a Higgs boson, as predicted by the Brout-Englert-Higgs mechanism

Stockholm, Sweden

- 2007 **CMS achievement award**, for crucial contributions to analyses of ECAL+HCAL beam tests and global runs

Geneva,

Switzerland

# Supervision

**T.-H. Hsu “Extra Yukawa and new Higgs boson searches in Run 2 and Run 3 with g2HDM” (PhD supervisor)**

Geneva, Switzerland

National Taiwan Univ. 2020 – present

**H.-Y. Yeh “Extra Yukawa and new Higgs boson searches in Run 3 with g2HDM” (MSc supervisor)**

Geneva, Switzerland

National Taiwan Univ. 2025 – present

**N. Bulte, “Search for Scalar Top Quark Partners & Parton Shower Tuning in Modelling Top Quark Pairs” (MSc supervisor)**

Geneva, Switzerland

Ghent Univ. 2016

**K. Beernaert, “Spin Correlations in  $t\bar{t}$  Systems in the  $\mu$ +jets channel using a Matrix Element Method with the CMS Detector at the LHC” (PhD supervisor)**

Geneva, Switzerland

Ghent Univ. 2012 – 2015

**B. Bilin, “Measurements of standard model heavy particle production in association with jets using proton-proton collision data at 8 and 13 TeV with the CMS experiment at the LHC” (PhD mentor)**

Geneva, Switzerland

Middle East Tech. U. 2011 – 2016

**M. O. Sahin, “Search for Z’ via Forward Backward Asymmetry in Dielectron Channel with the CMS Detector at the Large Hadron Collider” (MSc mentor)**

Geneva, Switzerland

Middle East Tech. U. 2011 – 2012

**B. Bilin, “Production of Z+Jet Events and HF Jet Energy Scale Calibration at 7 TeV in the CMS Experiment at LHC” (MSc mentor)**

Geneva, Switzerland

Middle East Tech. U. 2010 – 2012

**Y. J. Roh, “Measurement of the Forward-Backward Asymmetry in  $\gamma/Z$  Boson to Dilepton Events in Compact Muon Solenoid at a Center-of-mass Energy of 7 TeV” (PhD mentor)**

Geneva, Switzerland

Texas Tech. U. 2009 – 2011

Geneva, Switzerland

## Supervised summer projects at CERN

- B. Ors (Ecole Jeannine Manuel, Paris), *Job Shadowing* in CMS 2025
- G. Vandierendonck (Ghent Univ.) “Four Top Quark Production at the High Luminosity LHC” 2016
- N. Bulte (Ghent Univ.), “Determination of the Top Quark Pole Mass at  $\sqrt{s}=7,8$ , and 13 TeV” 2015
- I. Michiels (Ghent Univ.) , “ $t\bar{t}$  Spin Correlation in the  $t\bar{t}H$  Channel” 2014
- S. Demulder (Vrije Univ. Brussels), “Can the Incline Asymmetry be Observed at the LHC” 2014
- J. Duvillier (Ghent Univ.), “Energy Asymmetry Measurement using  $t\bar{t}$ +jet Systems at  $\sqrt{s}=8$  TeV in CMS” 2014
- C. Moortgat (Ghent Univ.), “Effects of Non-Zero Chromo-Moments on  $t\bar{t}$  Spin Correlation” 2013
- M. Unal (CERN, Geneva), “Analyses of Z+1 Jet Events using the Full Rapidity Coverage of CMS” 2012
- M. Orlov (CERN, Geneva), “Validation of Single Particle Response in HCAL” 2008

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## Supervised postdocs

- Gouranga Kole, “Extra Yukawa and new Higgs boson searches with g2HDM” 2022 – present
- Agostino De Iorio, “Extra Yukawa and new Higgs boson searches with g2HDM” 2023 – present

Geneva, Switzerland

## Coach

- high school students for the CERN/DESY beamline for schools competition 2021

## Teaching

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### Lectures at the Hadron Collider School (HASCO)

TOP QUARK PHYSICS

Gottingen, Germany

2014 – 2017

### Lectures at CERN Teachers Programs (TTP)

ASTROPARTICLE PHYSICS (NEUTRINOS, ASTROPARTICLE PHYSICS, GRAVITATION AND COSMOLOGY)

Geneva, Switzerland

2015 – 2020

### Lectures at ERASMUS ISSCSMB-12, International Summer School and Conference on High Energy Physics: Standard Model and Beyond

TOP QUARK PHYSICS AT COLLIDERS

Belek/Antalya, Turkey

28 Aug – 8 Sep 2012

### Problem sessions and laboratory courses at METU

GRADUATE ELECTROMAGNETIC THEORY I, PHYSICS FOR STUDENTS IN SCIENCE I & II, CONCEPTS OF MODERN PHYSICS,  
FRESHMEN PHYSICS LABORATORY I & II, EXPERIMENTS IN PHYSICS

Ankara, Turkey

2000 – 2005

## Tutorials

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### Tutorials on the two main tools in Monte Carlo production: Monte Carlo request Management and Production Monitoring Platform

Geneva, Switzerland

2017 – 2018

### Data Quality Monitoring (DQM) shift tutorials

Geneva, Switzerland

2009 – 2012

## Science Communication

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- Translation of **Particle Physics for Babies** (by Louie D. Corpe) to Turkish with Y. Uzunefe Yazgan., 2025
- **The best non-technical books to get interested in knowing the Universe** published in *Shepherd.com*, 2024
- **Towards the New Physics Higgs/Flavor Era**, poster in *ASP March meeting*, Taiwan. 2024
- **Hunting the Higgs Boson Siblings with Top Quarks**, *CMS Physics Briefing*, 2023
- **Higgs physics**, presentation in *Turkey-CERN status review*, CERN, Geneva, Switzerland, 2022
- **Search for extra Higgs Bosons at the LHC**, E. Yazgan et al. poster in *ASP March meeting*, Taiwan. 2022
- **Data science in high energy particle physics**, invited talk in *Istanbul Tech Week* (online conference), 2020
- **Old School Electroweak** in *CMS Result of the Month in Fermilab Today*, 2012
- Poster for **CERN: Accelerating Science Exhibition**, METU, Ankara, Turkey. 2012
- **Interview about CERN**, published in the journal *Radikal*, and *Matematik Dünyası*, 86 (2011) 20. 2011
- **Rediscovering the Weak Force** in *CMS Result of the Month in Fermilab Today*, 2010
- **Interviews on the LHC First Beam Day** on *CNN Turk*, 2008
- **Interview about CERN, Experiment of the Century**, published in the journal *Radikal*, 2007
- **Nobel physics prizes in astrophysics**, *Bilim ve Utopya*, 2003
- **METU Physics Department Outreach Days for High School Students**; Ankara, 2002, 2003

## Programming and software

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- Python, C/C++, Fortran, Shell, R, Bash, ...
- ROOT, CMSSW, Git, JIRA, Event generators, Mathematica, ...
- Latex, HTML/CSS, Markdown, ...

## Languages

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ENGLISH, FRENCH, TURKISH