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Curriculum Vitae

PERSONAL DETAILS

Name : Niki Saoulidou
 Date/Place of Birth : December 8, 1974, Athens, Greece
 Nationality, Gender : Greek, Female
 Marital Status : Married and mother of a 10 year old son.
 Spoken Languages : English, Greek
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 Zografou Campus 15771, Athens, Greece
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EDUCATION

PhD Degree : University of Athens, Physics Department, Program of Graduate Studies in Nuclear and Particle Physics (1999-2003), PhD Thesis “Direct Observation of the Tau Neutrino” (DONUT, E872 experiment, Fermilab) (Advisor Prof.G. Tzanakos)
Master's Degree : University of Athens, Physics Department, Program of Graduate Studies in Nuclear and Particle Physics (1996-1999), (Grade 8.71/10.00). Master Thesis “Calibration of the Electromagnetic Calorimeter for the DONUT Experiment (E872, Fermilab)” (Advisor Prof. G. Tzanakos)
Bachelor's Degree : University of Athens, Physics Department (1992-1996) (Grade 8.43/10.00)

ACADEMIC POSITIONS

2018-present Associate Professor, Physics Department, University of Athens, Greece.
 2011-2018 Assistant Professor (tenured July of 2015), Physics Department, University of Athens, Greece.
 2006-2011 Wilson Fellow (fast tenure-track position equivalent to Assistant Professorship), FNAL, USA.
 2003-2006 Postdoctoral Research Associate, FNAL, USA.
 1996-2003 Graduate Research Assistant-Doctoral Student at the Physics Department, University of Athens, Program of Graduate Studies in Nuclear and Particle Physics.

AWARDS-SCHOLARSHIPS

2015 Recipient of the **2015 “Messiniako” Excellence Award in High Energy Physics**
 Search committee: J.Iliopoulos, École Normale Supérieure, I.Bakas⁺ University of Patras, Greece, L. Resvanis, University of Athens, Greece, awarded by Nobel Prize Winner J. Cronin⁺
 2009 Recipient of the **2009 EPS (European Physical Society) Young Physicist Prize** for the contributions to neutrino physics.
 2006 Recipient of the **Martin and Beate Block Winter Fund Award** as the most promising young physicist.
 2001-2002 Graduate research assistant, **funded by State Scholarship Foundation** (Greece).
 1997-1999 Graduate research assistant, **funded by the General Secretariat of Research and Technology** (Greece).
 1996 **Top undergraduate student (class of 300) in the senior year.** Scholarship awarded by the State Scholarship Foundation (Greece).
 1993 **Top undergraduate student (class of 300) in the freshmen year.** Scholarship awarded by the State Scholarship Foundation (Greece).
 1992 **Top ten high school students nation-wide** admitted at the Physics Department of NKUA (Greece)

LEADERSHIP - MANAGEMENT POSITIONS

High Energy Physics Wide

2020-2021 **Member of the Long Range Planning Committee** of the Subatomic Physics Evaluation Section of the Natural Sciences and Engineering Research Council of Canada (NSERC) covering a period from 2022 through 2026 with a scope extending to 2036.
 2019-present **Member of the Fermilab (US) Long Baseline Neutrino Committee (LBNC)**, The LBNC is charged by the Fermilab Director to review the scientific, technical, and managerial

- progress, plans and decisions associated with the Fermilab Long-Baseline Neutrino Facility (LBNF) and the Deep Underground Neutrino Experiment (DUNE)
- 2018 **Section Co-Chair for the 2018 Competition** of the Subatomic Physics Evaluation Section of the Natural Sciences and Engineering Research Council of Canada (NSERC)
- 2016-2019 **Member of the Subatomic Physics Evaluation Section** of NSERC, Canada
- 2013-2015
- 2017-2018 **Member** of the Board of the Greek Society of High Energy Physics (EEFYE)
- 2019-present **Reviewer in HEP journals** JHEP, SciPost, New Journal of Physics (NJP)
- 2016-present **Reviewer of research proposals** submitted in the i) Swiss National Science Foundation, ii) Greece General Secretariat for Research and Technology, iii) Natural Sciences and Engineering Research Council Canada, iv) University Research Fellowship, Royal Society, UK v) Fund for Scientific Research-FNRS, Belgium, vi) Hellenic Foundation of Research and Innovation, Greece.

Experimental Collaboration Wide

- 2021-present **Member of the CMS Conference Committee**
- 2019-2021 **Co-Convener(L2)** of the CMS Physics Analysis Group (**PAG**) “EXOTICA”
- 2018-2020 **Member of the CMS Exotica/Beyond-Two-Generations Publications Committee**
- 2011-present **Member of 19 CMS Analysis Review Committees (ARC)** : EXO-11-059, HIN-11-003, EXO-11-061, EXO-12-048, SMP-12-017, SMP-13-007, SMP-14-009, SMP-14-013, SUS-15-011, SUS-16-021, SUS-16-034, SUS-17-009, EXO-18-001 and **ARC chair** on FTR-22-006, EXO-17-025, EXO-17-021, SMP-16-016, SMP-16-003, JME-15-001
- 2014-2017 **Co-Convener(L3)** of the CMS PAG “Exotica new physics searches with Jets”
- 2012-2014 **Co-Convener(L3)** of the CMS PAG “Standard Model Physics with Jets”
- 2011-2013 **Co-Convener(L3)** of the CMS Physics Object Group “Jet Algorithms”
- 2013-2015 **Responsible** of the particle flow reconstruction studies for the CMS HGCALE upgrade proposal
- 2007-2009 **Member of the MINOS Speakers Committee**
- 2007-2009 **Co-Convener(L2)** of the Future Running Scenarios Physics Group of the MINOS experiment
- 2006-2008. **Co-Convener(L2)** of the Neutral Current Physics Group of the MINOS experiment

Physics Analyses

- 2018-current **Main author** of the CMS ttH, H->bbbar dileptonic measurement with Run II data, and projections for Run III and HL-LHC [**HIG-19-011**][**FTR-21-002**].
- 2019-current **Main author** of the CMS search for paired dijet resonances with the full Run II dataset [**EXO-21-010**]. This is a novel analysis searching, for the first time at LHC, for resonant production in final states with at least four resolved jets. Analysis contact was my PhD student Magda Diamantopoulou, and after graduation the senior Postdoctoral researcher of my group, Dr. Eirini Tziaferi.
- 2017-2020 **Primary author (contact person)** of the CMS analyses searching for new dijet resonances [**EXO-17-024**][**EXO-19-012**]. A novel background prediction method is introduced in this analysis reducing the main background systematic uncertainties. This yields to significant gains in sensitivity especially for wide resonances which are of particular interest to Dark Matter models.
- 2014-current **Core member** of the dijet resonance search group utilizing offline and scouting jets yielding, among others, the first LHC Publication at 13 TeV searching for new physics [**EXO-15-001**][**EXO-16-032**][**EXO-16-056**].
- 2010-2014 **Primary author (contact person)** of two CMS SUSY di-lepton searches . One hunting for third generation SUSY particles [**SUS-13-016**], and another hunting for generic opposite sign dilepton signatures but at low missing transverse energy [**SUS-11-018**] with the use of Artificial Neural Networks. **Main author, co-editor** of the combination paper **SUS-14-010**.
- 2010-2014 **Primary author (contact person)** of two CMS differential dijet cross-section measurements at 8 TeV [**SMP-14-002**] and the first CMS measurement at 7 TeV [**QCD-10-025**]. **Main author** in the corresponding follow-up measurement with the full 7 TeV data-set [**QCD-11-004**].
- 2010-current **co-Editor of the first CMS publication** on jet energy scale and resolution determination [**JME-10-011**]. **Primary author (contact person)** of the **first CMS 7 TeV determination of jet resolutions** [**JME-10-014**]. **Main author** of the **first CMS jet performance studies** at

0.9 and 2.36 TeV [JME-10-001], and determination of PF and Calo jet identification Criteria [JME-16-003], for charged hadron subtracted and PUPPI [JME-18-001] jets. Core and key member and responsible together with my group for the derivation documentation, and support of PF jet identification criteria and baseline jet energy corrections for all jet collections.

2010-2011 **Core member** of the CMS code development team optimized for SUSY searches

MEMBER IN SCIENTIFIC COLLABORATIONS

DUNE (2016-Present)

CMS (2009-Present)

NOvA (2007-2010)

MINOS (2003-2010)

DONUT (1994-2003)

FUNDED PROPOSALS

2022-2024 Member of the Scientific Board, together with Prof. Jose Valle, IFIC, Universita Di Valencia, Spain, of an Hellenic Foundation for Research and Innovation (H.F.R.I) research grant for Postdoctoral researchers. **Competitive National funding**

Proposal ranked **1st in HEP Nation-Wide** and **7th in the “Physical Sciences” Nation-Wide.**

Budget 110.000 Euros

2020-2023 Primary Investigator (PI) of an H.F.R.I research grant. **Competitive National funding**

Proposal ranked **1st in HEP Nation-Wide** and **6th in the “Physical Sciences” Nation-Wide.**

Budget 200.000 Euros

2018-2021 Primary Investigator (PI) a State Scholarship Foundation (IKY) research grant for PhD students (2018-2021). **Competitive National funding**

The scholarship was awarded to my PhD Student Charis Kleio Koraka working on the CMS experiment on Higgs searches.

Budget 30.000 Euros

2017-2021. Primary Investigator (PI) of a “Niarchos Foundation Research Excellence Grant”

Budget 200.000 Euros

2011-2015 Member of a “Thalis” research grant awarded by the General Secretariat of Research and Technology (2011-2015). **Competitive National funding**

Total Budget 500.000 Euros for three nodes

2011-2015 Member of an “Aristeia” research grant awarded by the General Secretariat of Research and Technology (2011-2015). **Competitive National funding**

Total budget 400.000 Euros

TEACHING EXPERIENCE

2011 – current: Teaching core courses i) Physics III (electromagnetism) and ii) Physics IV (Modern Physics) in second year physics major students, iii) Nuclear Physics Labs in third year physics major students, and iv) a free lecture course on the most recent developments in high energy physics for freshmen physics major students.

2011 – 2017 : Participated, giving lectures, in outreach events in the context of the European Particle Physics Outreach Group (EPPOG) “Master Class” activity organized by the Physics department of the University of Athens, Greece

2006 – 2007 : Participated in Fermilab's educational program in conjunction with the Illinois Mathematics and Science Academy. Supervised two exceptional senior High School students one of which was selected to participate in the national high school conference to present the work we conducted together on the MINOS experiment. Following the presentation in the national high school conference the student was finally selected to visit a related workshop at KEK, Japan in order to present and further discuss the results of this work.

2003 – 2005: Participated in Fermilab's Educational Program: "Saturday Morning Physics". This included

tours and discussions on various Fermilab Experiments and Projects.

1997 – 2002: Teaching assistant for undergraduate students at the University of Athens, Physics Department Laboratories (Mechanics, Thermodynamics, Nuclear Physics and Advanced Nuclear Physics)

STUDENT, POSTDOC OFFICIAL SUPERVISION AND MENTORING (2011 – current):

In the context of the MINOS, NOvA and CMS experiments, and from the physics leadership positions I held, I have unofficially co-supervised and mentored numerous young students and postdocs that advanced in their careers both in and outside Academia. Below I list only the ones for which I was officially responsible.

Supervision: Postdoctoral Researchers (3)

1) Dr. D. Papoulias 2022-present : University of Athens, Greece, **Postdoctoral Researcher and PI of the H.F.R.I Research Grant “Astroparticle Physics Probes with the DUNE Experiment”**

2) Dr. E. Tziaferi 2014-present: University of Ioannina and University of Athens Senior **Postdoctoral researcher on CMS (with Thalís, Aristeia and H.F.R.I research grants) :**

Recently appointed co-convener of the CMS “Jets+X” physics analysis sub-group. This physics analysis sub-group is one of the four sub-groups of the EXOTICA group of CMS. EXOTICA is one of the largest CMS Physics Analysis Groups searching for new physics. Previously served (2017-2021) as the EXOTICA Jet Object Expert/Contact. Since 2014 co-leader of the CMS JETMET jet Identification object group, and key analyzer of the Exotica Dijet and paired Dijet resonance search physics analysis group.

3) Dr. A. Psallidas 2013 - 2015: NCSR Demokritos, Greece **Postdoctoral researcher on CMS (with Thalís research grant) :** worked together (core members) on the CMS High Granularity Calorimeter (HGCAL) upgrade project for HL-LHC.

2016-2022: Postdoctoral researcher at National Taiwan University, based at CERN and Monte Carlo generator contact for the HGCAL simulation and performance group.

2022-Present : Researcher C (eq. Assistant Professorship) at NCSR Demokritos, Greece.

Main Supervision: PhD Students (5)

2021- present PhD Candidate I. Zisopoulos , CMS Experiment, *Supported by an H.F.R.I Research Grant.*

Working on the development and extraction of jet energy corrections (JEC) for the entire CMS Collaboration, and being a key/core member of the paired dijet resonance search.

Top 1% of his class : Bachelors grade: 8.9/10 (4.5 years), MSc Grade 8.8/10 (1.5 years).

2020- present PhD Candidate P. Melas , DUNE Experiment, *Supported by an H.F.R.I Research Grant.*

Performing the first measurement of cosmic muon seasonal variation with the ProtoDUNE experiment at CERN.

Top 10% of his class : Bachelors grade 7.3/10 (4.5 years), MSc grade : 8.7/10 (1.5 years)

2018- 2021 Dr. C.K. Koraka, *Scholarship by National Scholarship Foundation, Greece*

“Study of the Higgs boson production in association with two top quarks and its subsequent decay to a $b\bar{b}$ pair with the CMS detector at the CERN LHC”

Top 1% of her class : Bachelors grade 8.8/10 (4.5 years) , MSc grade 8.8/10 (1.5 years).

Now Postdoctoral Researcher at CMS with the University of Wisconsin Madison, US)

2018-2022 Dr. D. Karasavvas, *Scholarship from Niarchos Foundation Research Excellence Grant,*

“Search for narrow and wide resonances, focusing on dark matter mediators, in dijet events with the CMS experiment at the CERN Large Hadron Collider”

Top 5% of his class : Bachelors grade 8.1/10 (4.5 years) , MSc grade 9.1/10 (1.5 years) .

Now in Private Sector, Data Scientist, BigData analysis, Application of ML & AI techniques.

2017-2021 Dr. M.M. Diamantopoulou , *Scholarship from Niarchos Foundation Research Excellence Grant,*

“Search for resonances in dijet and multijet events from proton-proton collisions at a center of mass energy of 13 TeV collected with the CMS detector at the CERN LHC”

Top 5% of her class : Bachelors grade 7.8/10 (4.5 years) , MSc grade 8.2/10 (1.5 years) .

Now Postdoctoral Researcher at ATLAS with Carleton University, Canada

Main Supervision: Master Students (8)

2021-present Z. Painesis , MSc in CMS, *Supported by an H.F.R.I Research Grant.*
Top 20% of his class, Bachelor's grade 8/10 (5.5 years).

2020-2021 M. Madianos, MSc in CMS, *Supported by an H.F.R.I Research Grant.*
Top 1% of his class : Bachelors grade 8.9/10 (4 years).
Now in Private Sector, Data Scientist, BigData analysis, Application of ML & AI techniques

2019-2021 I. Zisopoulos, MSc in CMS
Now PhD Candidate at NKUA

2018-2020 P. Melas, MSc in ProtoDUNE
Now PhD Candidate at NKUA

2016-2018 C.K.Koraka, MSc in CMS
Continued for PhD, now Postdoctoral Researcher with the University of Wisconsin Madison, USA

2016-2018 D. Karasavvas, MSc in CMS
Continued for PhD, now Private Sector, Data Scientist, BigData analysis, Application of ML & AI techniques

2015-2017 M.M. Diamantopoulou, MSc in CMS
Continued for PhD, now Postdoctoral Researcher with the University of Carleton, Canada

2011-2014 M. Chaniotakis MSc in CMS, *Supported by State Scholarship Foundation.*
Now in Private Sector, R&D for Science Education

Main Supervision: Undergraduate Students (14)

2022-present Amalia Triantou , Diploma thesis in CMS
Fourth year undergraduate, top 5% , Bachelor's grade 8/10, expected duration of studies : 4.5 years

2020-present Polytimi Iosifidou, Diploma thesis in CMS
Fourth year undergraduate, top 1-2% , Bachelor's grade >9/10, expected duration of studies : 4 years

2020-present Pavlos Panos, Diploma thesis in CMS
Fourth year undergraduate, top 1-2% , Bachelor's grade >9/10, expected duration of studies : 4 years

2020-2021 Maria Kotsarini, Diploma thesis in CMS, got admitted in the Physics Department, NKUA, Graduate School
Top 10%, Bachelor's grade 7/10 (4.5 years)

2020-2021 Haris Painesis , Diploma thesis in CMS. Now an MSc student at the Physics Department, NKUA, Graduate School

2019-2021 Michail Madianos, Diploma thesis in CMS. Completed his MSc at the Physics Department, NKUA, Graduate School

2019-2020 Dimitrios Ntounis , Diploma thesis in CMS,
Top<<1%, Bachelor's grade 9.9/10, Admitted at Stanford Physics Department Graduate School

2018-2019 Pantelis Melas, Diploma thesis in CMS. Now an PhD student at the Physics Department, NKUA, Graduate School

2017-2019 Ilias Zisopoulos, Diploma thesis in CMS. Now an PhD student at the Physics Department, NKUA, Graduate School

2017-2018. Kyriakos Demeroykas, Diploma thesis in CMS. Now in Graduated School in Data Science in Bath, UK.

Top 5% of, average grade 8/10, got Bachelors in 4 years.

2014-2016 Dimitrios Karasavvas, Diploma thesis in CMS. Completed his PhD at the Physics Department, NKUA, Graduate School

2013-2015 Magda Diamantopoulou, Diploma thesis in CMS. Completed his PhD at the Physics Department, NKUA, Graduate School

2013-2015 Eytyxia Sagkrioti, Diploma Thesis in CMS, Completed her PhD in theoretical physics at the Physics Department, NKUA, Graduate School. Now obtaining MSc in bioinformatics and Computation Biology at NKUA, Greece.

Top 5% Bachelors grade 8/10, got Bachelors in 4 years.

2011-2012 M. Boura-Vistalina, Diploma Thesis in CMS, Completed her MSc at the Physics Department, NKUA, Graduate School

Top 5% Bachelors grade 7.8/10, got Bachelors in 4.5 years.

MSc steering committee:

- G. Karathanasis (Completed MSc in CMS 2012-2015)
- A. Stakia (Completed MSc in CMS 2013-2015)
- P. Kontaxakis (Completed MSc in CMS 2013-2015)

PhD steering committee:

- G. Flouris (PhD in CMS 2012- 2016, now working the private sector)
- A. Agapitos (PhD in CMS 2012- 2016, now a Postdoctoral researcher at the University of Peking, China)
- A. Stakia (PhD candidate in CMS 2015-current)
- G. Karathanasis (PhD candidate in CMS 2015-current)
- W. Karageorgos (PhD candidate in CMS 2011-current)

PhD evaluation committee:

- Dr. Emmanouil Vourliotis (2022, NKUA, now a Postdoctoral Researcher in UCSD,USA)
- Dr. Luigi Sabetta (2022, Sapienza, Universita Di Roma, Italy)
- Dr. Martina Vit (2021, Ghent University, Belgium)
- Dr. E. Hansen (2020, Lund University, Sweden, now a Postdoctoral researcher at the University of Manchester, UK)
- Dr. E. Sagkrioti (2020, NKUA, now obtaining MSc in bioinformatics and Computation Biology at NKUA, Greece)
- Dr. E. Romero (2017, University of Valencia, Spain)
- Dr. S. Angelidakis (2016, NKUA, Greece, now a Postdoctoral researcher at NKUA, Greece)
- Dr. N. Tsirintanis (2016, NKUA, Greece)
- Dr. K. Iordanidou (2015, NKUA, Greece, now a Senior Data Scientist, Accenture, Zurich, Switzerland)
- Dr. A. Antonaki (2014, NKUA, Greece)
- Dr. L. Gouskos (2014, NKUA, Greece, now Research Staff at CERN)
- Dr. Emma Torro Pastor (2013, University of Valencia, Spain, now a Distinguished Researcher at Instituto de Física Corpuscular (IFIC), Spain)

COMPUTING SKILLS: Advanced experience in scientific programming in C, C++, Python and Fortran. Advanced experience on statistical analysis and on the development of Multivariate Analysis Techniques (artificial neural networks, boosted decision trees, k-nearest neighbors etc) for physics analysis. Advanced experience on the implementation of clustering techniques with the use of minimal spanning trees. Advanced

experience on administration and maintenance of Linux, MAC and WinNT workstations. Advanced experience on editing and image processing packages, and working experience on development and maintenance of web pages.

RESEARCH ACTIVITIES (1994-Present)

The main motivation and guiding principle in my research career so far is to conduct discovery physics, having difficult problems to solve and unanswered questions to investigate. I focused for many years (1994-2010) on the detailed study of the most elusive and enigmatic particle of the Standard Model, the neutrino, and in the past twelve years (2010-present) on the hunt for Dark Matter and new particles at the LHC in a model dependent top-down approach with dedicated searches, and in a model independent bottoms-up approach.

Doing so, I combine hard and meticulous work, with the ability to pioneer, identify and contribute significantly to impactful physics projects by designing new experiments, new detectors, new physics searches and new methods for hunting for new physics. In the DONUT experiment, in 2000 as a PhD student, I introduced artificial neural networks (ANNs) in several aspects of the analysis, something that very few analyses were doing at the time. As a postdoc at the MINOS experiment (2003-2006), I developed a new data-driven method for performing the main oscillation analysis significantly reducing systematic uncertainties, that has been used for all publications ever since. As a Wilson Fellow and Assist. Prof. in the CMS experiment I introduced both ANNs and a novel, entirely data-driven, method for hunting for Supersymmetry significantly extending the reach at events with low missing transverse energy (2010-2013 *analysis contact*), something that since has been pursued at large. Then, as an Assist. and Assoc. Prof., I pioneered together with my former PhD student D. Karasavvas (2016-2019 *analysis contact*), a new novel data-driven method for predicting the main QCD background in the Dijet resonance searches. This significantly enhanced the discovery potential for broad resonances, which are key for discovering Dark Matter and now Lepton Flavour Violating phenomena. Then, I co-lead and developed together with my group (former PhD student M. Diamantopoulou, my postdoc Dr. E. Tziaferi, graduate student I. Zisopoulos, undergraduate students D.Ntounis and M. Kotsarini) and in Collaboration with research teams from Fermilab (Dr. R.Harris, Dr. B. Dobrescu, Dr. J. Isaacson) and Rutgers (Prof. E. Halkiadakis, Dr. M. Osherson, and undergraduate student T.Wai) a new and novel analysis (2019-2022), performed for the first time at LHC, targeting resonant production of paired dijet resonances (*PhD student Magda Diamantopoulou and now Postdoctoral researcher Dr. E. Tziaferi are the analysis contacts*). In parallel, I lead, together with my former PhD student C.K.Koraka, the development and implementation of a novel way of performing the ttH, $H \rightarrow b\bar{b}$ measurement, utilizing a new data-driven method for obtaining the main ttbar background making the analysis from systematics, statistics limited : this is now used for making projections for Run III and the HL-LHC (*former PhD student Charis Kleio Koraka is the analysis contact*). Regarding new experiment and new detector proposals in 2007-2008 I was in a team of few that developed the idea of the DUNE (then DUSEL) experiment, and in 2013 I was one of the less-than-ten CMS Colleagues that aggressively pursued the HGCAL (then PFCAL), forward calorimeter upgrade option for the HL-LHC. Regarding hadronic jets, I lead the commissioning of PF jets with the first CMS collisions data, pioneering the development of PF jet identification criteria (*co-convener of the relevant group*), used by all CMS physics analyses, performed first CMS SM measurements with jets (*analysis contact, co-convener of the relevant group*), designed and led the performance studies of novel PF jets at trigger level (*PhD student D. Karasavvas was the analysis contact*) that showed they can be utilized to conduct novel physics searches with jets in Run III and HL-LHC. Since 2018 I am responsible, together with my group, for developing and providing for all CMS analyses the baseline jet energy corrections. Finally, I have always contributed significantly to data and physics object commissioning studies (DONUT,MINOS,CMS), as well as detector commissioning and operations (DONUT, MINOS,CMS).

Collider Physics: The LHC currently provides proton-proton collisions at 13 TeV, and soon at 13,6 TeV, the highest energies to date, enabling experiments to test and probe the Standard Model (SM) at unprecedented scales. LHC experiments can test a variety of plausible extensions to the SM, like supersymmetry, new extra dimensions, technicolor, contact interactions, new fermionic matter, heavy Majorana neutrinos, Dark Matter, Dark sector particles, and many others, and hence provide a unique path for discovery through an extremely rich physics program for decades to come.

Searches for New Physics (2010-Present):

Exotics (2013-present) : Lead the CMS EXOTICA physics analysis group (PAG) [co-convener: 2019-2021], one of the largest groups hunting for new physics in a variety of final states, interpreting in a plethora of new physics models. This group has more than eighty analyses (> 500 Colleagues) categorized in four sub-groups according to the event final state : “Jets+X”, “MET+X”, “non-Hadronic” and “Long-Lived”. It covers many possible new physics signals, including ones from new extra dimensions, new interactions and additional gauge bosons, quark compositeness, new fermionic matter, heavy Majorana neutrinos, Dark Matter and Dark sector particles, lepto-quarks, additional Higgs particles from several SM extensions and others.

Before that, lead [co-convener: 2014-2017] the CMS Exotica “Jets+X” physics analysis sub-group that hosts searches for new physics (NP) with jets in the final state, with ~ 15 analyses and ~ 80 members. These include critical NP LHC searches like: i) the hunt for dark matter utilizing events with two resolved jets or one large cone-size jet in the final state ii) the model independent narrow and wide dijet resonance searches targeting a variety of new physics models like RS gravitons, excited quarks, W' , Z' iii) the multi-jet searches for extra-dimensions, mini black holes, R-parity violating SUSY, diquarks iv) the searches for heavy neutrinos and right-handed W_R , lepto-quarks, excited leptons, SUEPs etc. Worth noting that six out of the ten CMS Exotica “High Priority Analyses” (HPA), which presented the first Run II results in December of 2015 at CERN, were conducted within this group, along with the first Run II LHC publication on NP searches (dijet narrow resonance search).

In 2013 I joined the core analysis team of the dijet resonance searches in the “Jets+X” exotica subgroup. This is a model independent search for new physics hunting for resonances in the invariant dijet mass spectrum. It is one of the ten high priority analyses of the CMS Exotica group and yielded the first CMS and LHC publication on new physics searches with the Run II data. It is now also one of the most sensitive analysis hunting for dark matter production, through its mediator, at hadron colliders. As such, it has been and still is presented in several major conferences (LHCP 2015, LHC CERN Jamboree 2015, Moriond 2016, ICHEP 2016, Moriond 2017, EPS 2017, LHCP 2018, Moriond2019, LHCP 2020, EPS-HEP 2021 etc).

Together with my PhD students Magda Diamantopoulou and Dimitrios Karasavvas, and Postdoctoral researcher Dr. Eirini Tziaferi, I played a leading role in these searches, contributing to all aspects of the analysis :

- i) co-led the development of all needed analysis tools, coordinated, completed and documented a large set of optimization studies for both the high (>1.2 TeV) and the low (600 GeV – 2 TeV) mass search
- ii) performed, presented and documented all commissioning, data-quality and trigger related studies
- iii) proposed and led the development of a very robust, complementary analysis methodology utilizing a data-driven method for prediction the main QCD SM background, called the “ratio method”. This is now the main analysis method for the high mass search yielding significantly increased sensitivity, by up to factors of two, especially for wide resonances. This complementary analysis method is also critical in case we observe a signal, due to the fact that it yields higher signal significances due to smaller systematic uncertainties. The publication is highly cited, and the results, both the preliminary and the full Run II ones, have been presented in several high profile conferences PIC2018, DISCRETE2018, Moriond2019, LHCP2020 and others.

Since 2019, given the very unusual highest dijet mass event we observed and published in the context of the high mass dijet resonance search, and given also the clustering of events with dijet masses close to 8 TeV from both the ATLAS and CMS Collaboration I co-led and developed together with my group (Dr. Eirini Tziaferi, PhD students Magda Diamantopoulou and Ilias Zisopoulos, and undergraduate students Maria Kotsarini and Dimitrios Ntounis) and in Collaboration with Colleagues from Fermilab and Rutgers, a novel paired dijet resonant search targeting such signatures. This analysis, which yielded a local (global) excess of 3.9σ (1.6σ), is approved, presented and highlighted in Moriond 2022, and a CERN-Courier article with the title “Dijet excess intrigues at CMS” CERN courier article, <https://cerncourier.com/a/dijet-excess-intrigues-at-cms>. We are of course, eagerly awaiting to conduct the Run III search at 13,6 TeV, to see if this is a statistical fluctuation or new physics.

Supersymmetry (2010-2013): Performed pioneering work on NP searches using advanced multivariate techniques with the first LHC data. In 2010, led, developed and performed an inclusive analysis utilizing events with at least two opposite-sign (OS) leptons and two jets in the final state, and relatively low missing transverse energy (MET), using the discriminating power of Artificial Neural Networks (ANNs) to differentiate signal events from the large SM background in this region of phase space. This multivariate analysis

was more sensitive in the high MET region, but also had significant discovery potential in the low MET region where other, traditional, analyses had little or no sensitivity. This analysis has been approved and published in Phys. Rev. D in 2011, and has been showed in many high-profile conferences (Moriond 2011, SUSY2012, HCP2012).

Then, led, constructed and performed a completely data-driven, hence almost systematics free, search for third generation SUSY. This search targeted gluino induced stop production in events with two OS leptons in the final state, large number of jets and b-jets, and large missing transverse energy. The analysis has been approved, and published in Phys. Lett. B, and has been presented in numerous high profile conferences (DIS2014, ICHEP2014, and SUSY2014).

Standard Model Measurements (2010-present)

Higgs Physics (2017-present) : Led and developed together with my group (MSc student Haris Painesis, undergraduate student Polytimi Iosifidou, PhD student Charis-Kleio Koraka) and in collaboration with Dr. G. Anagnostou and Dr. G. Daskalakis from the NCSR Demokritos Institute, a novel analysis for the measurement of the $t\bar{t}H$, $H \rightarrow b\bar{b}$ associated production in the dileptonic channel, that allows us to study in detail the Higgs coupling with the heaviest known elementary particle. This analysis pioneered the reconstruction of the Higgs mass, as the final observable turning the search into a “bump” hunt over the smooth $t\bar{t}b\bar{b}$ background. For this, we introduced and utilized i) novel kinematical methods for the Higgs mass reconstruction and ii) an entirely data-driven method for estimating the main $t\bar{t}b\bar{b}$ background. The former identifies the Higgs particle using its mass, and the latter significantly reduces the main systematic uncertainties of the measurement, making it in the longer term (HL-LHC) statistics from systematics limited.

We have now completed the full Run II analysis (CMS Thesis Endorsement on September of 2021 of former PhD student Charis Kleio Koraka). In addition, our novel method for estimating the $t\bar{t}b\bar{b}$ background from lower b-tagged jet multiplicities is incorporated in the combination analysis using the full Run II dataset and all final states (full hadronic, single-lepton and dileptonic), targeting publication in the Summer of 2022. In parallel we have performed the analysis sensitivity projection for the upcoming Run III and HL-LHC, fully exploiting its potential being statistics and not systematics limited. This analysis has been approved, made public and incorporated in the ATLAS-CMS White Paper for Snowmass.

Jet cross section measurements (2010-2015): As contact person and key analyzer, performed, together with my former student Manolis Chaniotakis, QCD measurements of the inclusive jet and dijet cross-sections with 7 and 8 TeV data, yielding among the most precise measurements to date and thus published to peer reviewed journals. Led, coordinated and supervised, being the co-convener of the CMS Physics Analysis Group “Standard Model Physics with Jets” [2012 -2014], all CMS QCD related measurements with jets in the final state, yielding seven preliminary public results, and eight publications in referred journals, a significant outcome for this physics group.

Physics Object Commissioning, Performance and Calibration (2009-Current):

PF Jet Commissioning : Among the first who performed early detector commissioning studies analyzing the first collision data, studying in detail jet quantities and characteristics. This work yielded the first CMS public results (physics analysis summaries) with collision data in 2010 related with jet and missing transverse energy performance. Continuing till now, together with my group, to performe detailed studies of PF jet characteristics in every new data-taking period, providing very useful and critical in times input to the experiment, and contributing to smooth and high quality data-taking.

Data Commissioning in early running: Member of the core group, which developed the code and the criteria needed in order to select and analyze data geared towards SUSY searches (member of the SUSYCAF team), yielding the first CMS internal document (analysis note) describing the analysis of the first collision data from a SUSY perspective, and serving as reference for subsequent SUSY analyses.

Jet energy corrections and jet resolutions : Led the work, being the co-convener of the CMS Jet Algorithms group [2011-2013], related with the estimation of the jet energy resolution using data-driven techniques, and served as the editor of the first CMS publication describing the estimation of jet energy scale and jet resolution. This publication, summarizing the work of this group, is a milestone/reference CMS publication, having collected over 1000 citations to date. Since 2018 responsible, together with my group, for the estimation and detailed studies of baseline jet energy corrections (JECs), obtained from simulation,

for all types of PF jets (AK4, AK8, PUPPI, CHS etc). This responsibility includes presenting, documenting the results and providing collaboration – wide support.

Jet identification criteria : Pioneered, in 2010, and led the effort for the development, documentation, CMS software implementation and user support of the jet quality selection and identification criteria (JetID) used by all CMS analysis, enabling the first CMS mono-jet Dark Matter searches. Since 2010 I am the contact person responsible for this task together with my group. During Run II further developed, tuned presented and documented jet quality criteria for every different data-taking period, extending them to novel jet physics objects, called PUPPI jets, which significantly suppress pile-up interactions. As such they are going to be the standard analysis objects in the forthcoming data-taking periods. It is important to note that these criteria are utilized both offline and online as part of the High-Level Trigger.

CMS Upgrades (2013-present):

CMS High Granularity Calorimeter (HGCal) for HL-LHC (2013-2016) : Led the work for porting, further developing and utilizing the PandoraPFA particle flow algorithm, used over a decade by the entire ILC community and lately by neutrino experiments, in exploiting and studying the performance of a high granularity forward calorimeter (HGCal) for the CMS Phase II upgrades. Myself, along with a very small group of people initially, in close collaboration with former Demokritos Institute Postdoc Dr. Andreas Psallidas (now a postdoc at University of Taiwan working on HGCal) and the PandoraPFA authors, made the PandoraPFA package fully operational, utilized it, developed all needed analysis tools and conducted jet, photon and electron related performance studies with HGCal. These studies were documented and presented to the CMS collaboration and were critical for its decisions in 2014 and 2015 as to which of the initially three (2014) and then two (2015) proposed detectors for the High Luminosity LHC (HL-LHC) upgrades would go forward. The HGCal proposal was chosen in April of 2015 by the CMS collaboration as the forward calorimeter upgrade option for the HL-LHC running period.

Jet Particle Flow Scouting for Run III and beyond (2020-present) : Together with my PhD student, Dimitrios Karasavvas, joined the effort for implementing and expanding the novel “CMS PF scouting” method for Run III with the use of GPU computing. The goal of this work is to fully utilize the scouting discovery potential in Run III and HL-LHC, lowering PF jet trigger thresholds allowed by the significant gains in timing with the use of GPUs and the formation of PF jets with tracks from the pixel detector only (“Patatrack pixel tracks”). We have conducted numerous, detailed jet performance studies that clearly demonstrated their very good physics performance. This is true for both resolved and boosted jet topologies. This work was critical on the decision to utilize these physics objects in Run III and HL-LHC, that will allow us to probe unexplored regions of parameter space at lower particle masses and couplings and hence significantly enhance the physics discovery potential. The results are already made public and documented in a CMS detector performance note.

Neutrino Physics: The neutrino has been one of the most elusive, enigmatic and fascinating particles of the last 80 years, since Pauli proposed its existence “in desperation”, as he wrote in this letter to the community in the 1930;s. The existence of the neutrino, the non-zero non-degenerate neutrino masses yielding neutrino oscillations, verified and measured with great precision with atmospheric, solar, reactor, accelerator neutrinos, and in the past four years the measurement of a relatively large third mixing angle, came as great surprises to the high-energy physics community. The smallness and origin of the neutrino mass, the question of CP violation (CPV) in the neutrino sector, the hierarchy of the neutrino masses, and the neutrino nature itself as a Dirac or Majorana particle are all major open questions in the field of neutrino physics. My research in the area of neutrino physics is described below.

USA long-baseline neutrino experiment study (2007-2009): Played a key and leading role in this group: I developed fast simulations and elaborate fitting tools for the evaluation of the discovery potentials of future neutrino oscillation experiments, studying and examining several detector options, beam configurations, and baselines. These studies were crucial in determining the proposed staged accelerator neutrino program in the US (and worldwide) for the following decades. As such, they were presented, and used by the Fermilab Directorate, the Fermilab PAC (physics advisory committee) and the US DOE/NSF Advisory Panels HEPAP (High Energy Physics Advisory Panel), and P5 (Particle Physics Project Prioritization Panel) with me serving as one of the key contacts. This work resulted in the strategic decision of proposing the DUSEL (then), DUNE (now) long baseline, deep underground neutrino facility. After many years and excellent work from the neutrino physics community, DUNE is now gaining tremendous momentum, and is becoming the biggest international deep underground neutrino experiment that could dominate advancements of our

knowledge in this field for the next decades.

NOvA (NuMI Off-Axis Nue Appearance) experiment (2006-2009): Played a leading role in a variety of optimization studies before the construction phase of the experiment: for the near-detector electronics in order to be able to resolve single neutrino interactions (multiple neutrino events are present in the Near Detector, for the determination of the optimal near detector position in order to achieve maximum cancellation of the near-to-far detector extrapolation uncertainties. Also, pioneered the use of artificial neural network techniques to maximize the discovery potential of the experiment, which have been used to obtain the discovery potentials for θ_{13} and the neutrino mass hierarchy, documented in the Technical Design Report. Due to my above contributions to the experiment I was included in the first publications in 2016 with real data, both for the muon neutrino oscillations into tau neutrinos (main oscillation channel) and for those into electron neutrinos which were very recently discovered (2012) from experiments close to nuclear reactors.

MINOS (Main Injector Neutrino Oscillation Search) experiment (2003-2010): I played a crucial and leading role in the installation, the commissioning, and monitoring of the near detector and the data collection, quality control, and data analysis of both the far and the near detectors of the experiment.

I worked on the characterization of the Multi Anode Photomultipliers used in the MINOS Far Detector, on the calibration and online monitoring of the near detector QIE electronics, as well as on the near detector installation and commissioning phase. Developed event separation techniques using graph theory, and event classification techniques using artificial neural networks.

Led, constructed and deployed a robust and pioneering near-to-far extrapolation technique, cancelling the main neutrino beam and cross-section systematic uncertainties and fully utilizing the “two-detector” MINOS designs. With this I performed, from start to end, the first oscillation analysis of the MINOS experiment. This method is used for the MINOS main oscillation analyses till now. As the co-convener of the Neutral Current Physics Group led the effort for the sterile neutrino measurement.

As the co-convener of the Future Running Scenarios Physics Group, led the effort for exploring and evaluating future MINOS running scenarios, based on physics impact and discovery potentials of all possible oscillation measurements. The Fermilab Directorate, and the Physics Advisory Committee (PAC) used the recommendations of this study in order to determine the future running configurations of MINOS.

DONUT (Direct Observation of the NUTau) experiment (1994-2003): I worked on nearly all aspects of the experiment: From the installation of the detector and running the experiment, to the calibration of the electromagnetic calorimeter, and the final data analysis of neutrino interactions. I developed clustering methods for pattern recognition and event reconstruction, using graph - theory and minimization techniques. I developed artificial neural network techniques for neutrino event selection, neutrino event characterization, and background estimation, used for the first observation of the tau neutrino.

CONFERENCE ORGANIZING COMMITTEES (11)

- Co-chair and co-organizer of the Beyond the Standard Model Sessions at ICHEP 2022, Bologna, Italy, 7 – 13th July 2022.
- Co-chair and co-organizer of the Beyond the Standard Model Sessions at LHCP 2021, Paris, France, 7 – 12th June 2021.
- Co chair and co-organizer of the “New results from LHC, New facilities” sessions at DISCRETE 2018, Vienna, Austria, 26-30 November 2018
- Co-chair and co-organizer of the Exotica Parallel Sessions at LHCP 2018, Bologna, Italy, 4 - 9 June 2018,
- Co-convener and co-organizer of the QCD sessions in the SM@LHC 2015 Conference, 21-24 April 2015, Galileo Galilei Institute, Florence, Italy.
- Local Organizing Committee of HEP 2015: Conference on Recent Developments in High Energy Physics and Cosmology, 14-17 April 2015, Hellenic Society for the Study of High Energy Physics, Athens, Greece.
- Local Organizing Committee of HSSHEP 2014: Conference on Recent Developments in High Energy Physics and Cosmology, 8-10 May 2014, Hellenic Society for the Study of High Energy Physics, Chora, Island of Naxos (Greece).
- QCD session chair at Blois Conference, May 29-June 3, 2011, Blois France.
- Organizing Committee of the XXIV International Conference on Neutrino Physics and Astrophysics (NEUTRINO2010)
- Scientific Organizing Committee of the 11th International Workshop on Neutrino Factories, Super Beams and Beta Beams (NUFACT2009)

- Local Organizing Committee of the 2008 Neutrino Physics Summer School (NUSS2009)

TALKS AT CONFERENCES (21)

- 21) "Recent EXOTIC results from ATLAS and CMS", (**Invited talk**), On behalf of the ATLAS and CMS Collaborations, **Aspen Winter Conference on Particle Physics: New methods and ideas at the frontiers of particle physics**, 20-25 Mar 2022, Aspen, CO (United States) (Cancel due to COVID)
- 20) "Hunting for Dark Matter with the ATLAS and CMS Experiments", (**Invited talk**), On behalf of the ATLAS and CMS Collaborations MOCa workshop (Materia Oscura en Colombia) 8-11 June 2021
- 19) "QCD impact in BSM searches at LHC", (**Invited talk**), **QCD@LHC Workshop**, 31 Aug-4 Sep 2020, Video only
- 18) "Recent results from narrow and broad, low and high mass dijet resonance hunting with the CMS Experiment", **CERN-LHC Seminar on Tuesday 23 July 2019 in Council Chamber (503-1-001) at 11h00:**
- 17) "Standard Model measurements with photons", (**Invited talk**), **PHOTON 2019**, International Conference on the Structure and the Interactions of the Photon, 3-7 June 2019, Frascati, Italy
- 16) "BSM searches with jets in CMS", (**CMS Selected talk**), **DISCRETE 2018**, 26-30 November 2018, Vienna, Austria
- 15) "Searches for new heavy resonances in final states with dileptons, diphotons and dijets in CMS", (**CMS Selected talk**), 29th Rencontres de Blois, Particle Physics and Cosmology, May 28 - June 02, 2017, Blois, France
- 14) "QCD with jets and photons at ATLAS and CMS", (**CMS Selected talk**), 28th Rencontres de Blois, Particle Physics and Cosmology, May 29 - June 03, 2016, Blois, France
- 13) "Recent results from CMS", (**CMS Selected talk**), **PLANCK2015: 18th International Conference from the Planck Scale to the Electroweak Scale**, 25-29 May 2015, Ioannina, Greece
- 12) "Summary of the QCD results" (N. Saoulidou, V. Coco, A. Banfi)", (**Invited talk**) **SM@LHC 2015 Conference**, 21-24 April 2015, Galileo Galilei Institute, Florence, Italy.
- 11) "Inclusive SUSY searches at CMS" (**CMS Selected talk**) **DIS 2014: XXII International Workshop on Deep-Inelastic Scattering and Related Subjects**, 28 Apr-2 May 2014, Warsaw (Poland) (**Major international conference**).
- 10) "Searches for third generation SUSY from CMS", (**CMS selected talk**) **ICNFP2013: 2nd International Conference on New Frontiers in Physics**, 27 Aug-7 Sep 2013, Orthodox Academy of Crete, Kolymbari (Greece)
- 9) "QCD results at LHC", (**CMS and ATLAS Selected talk**), **Rencontres de Moriond, EW interactions and Unified Theories**, March 2nd - 9th, 2013, La Thuile, Aosta Valley, Italy. (**Major international conference**)
- 8) "SUSY Searched at CMS", (**CMS Selected talk**), **ICFP2012: First International Conference on New Frontiers in Physics**, 10-16 Jun 2012, Kolymbari (Greece).
- 7) "QCD results with jets and photons from the CMS experiment", (**CMS Selected talk**) **23rd Rencontres de Blois Particle Physics and Cosmology**, 26th May – 3 June 2011, Blois, France (**Major international conference**)
- 6) "Neutrino Physics Experiments", **Invited Talk** at **DISCRETE '08**, 11 - 16 December 2008, IFIC, Valencia, Spain
- 5) "Status and prospects for long baseline neutrino experiment", **Invited Talk** at **Nufact08**, 30th June - 5th July 2008, Valencia, Spain (**Major international conference**)
- 4) "Future possibilities with neutrino beams from Fermilab", **Invited Talk** at **Neutrino 2008 (the XXIII International Conference on Neutrino Physics and Astrophysics)** 25-31 May 2008, Christchurch, New Zealand (**Major international conference**)
- 3) "Recent Development in Experimental Neutrino Physics", **Invited Talk** at **ASPEN Winter Conference "Revealing the Nature of Electroweak Symmetry Breaking"**, 13-19 January 2008, ASPEN Colorado USA. (**Major international conference**)
- 2) "MINOS Experiment: Status and First Results from the NUMI Beam", **Invited Talk** at **Les Rencontres de Physique de la Vallée D'Aoste**, 4th March 2007, Italy (**Major international conference**)
- 18) "Status of the MINOS Experiment", **Invited Talk** at **ASPEN Winter Conference "Particle Physics at the Verge of Discovery"**, 12-18 February 2006 ASPEN Colorado, USA (**Major international conference**)
- 1) "DONUT: Neutrino Analysis Techniques", **Invited Talk** at **Les Houches Euro-conference on Neutrino Masses and Mixings** 18-22 June 2001, Les Houches, France (**Major international conference**)

COLLOQUIA, SEMINARS, SCHOOLS (14)


- 14) "The big experiments at the LHC", EPPOG Master Class Seminars, University of Athens, Greece, 28th February 2017, 2016, 2015, 2014, 2013, 2012
- 13) "The CMS experiment at the LHC", Seminar in Physics High School teachers and High School students, at Ellinogermaniki Agogi Private School, organized by the University of Athens, Greece, 19th April 2013.
- 12) "Beyond T2K and NOvA: Superbeams and very large detectors", International Neutrino Summer School, Fermi National Accelerator Laboratory, Batavia, Illinois USA, 15th July 2009
- 11) "Neutrino Physics and Experiments", Fermilab Summer Lectures, Fermi National Accelerator Laboratory, Batavia, Illinois USA, 05th August 2008
- 10) "Accelerator-based Long Baseline Neutrino Experiments", Colloquium at Caltech University, USA, 20th November 2008
- 9) "Neutrino Physics at Fermilab", Fermilab Colloquium, Fermi National Accelerator Laboratory, Batavia, Illinois, USA, 9 April 2008
- 8) "MINOS Experiment: Oscillation results from the first two years of running", Colloquium at Northwestern University, USA, 30th November 2007
- 7) "MINOS Oscillation results from the first two years of running and Future accelerator neutrino oscillation experiments", Seminar at the University of Chicago, USA, 8th October 2007
- 6) "Sensitivities and Contours: Tutorial I", at the "Neutrino Physics Summer School at Fermilab", Fermi National Accelerator Laboratory, Batavia, Illinois, USA, July 2-13, 2007
- 5) "Neutrino Physics and Experiments", Fermilab Summer Lectures, Fermi National Accelerator Laboratory, Batavia, Illinois USA, 17th July 2007
- 4) "MINOS Experiment: Oscillation results from the first two years of running", Fermilab Special Wine and Cheese Seminar, Fermi National Accelerator Laboratory, Batavia, Illinois USA, 19th July 2007
- 3) "MINOS Experiment: Status and First Results from the NUMI Beam", Colloquium at Yale University, USA, October 13th, 2006
- 2) "MINOS Experiment: Status and First Results from the NUMI Beam", Seminar at the University of Maryland, USA, November 15th, 2006
- 1) "Neutrinos: Past, Present and Future or The Neutrino Odyssey", Fermilab World Year of Physics Symposium, 8 October 2005, Fermi National Accelerator Laboratory, Batavia, Illinois, USA
- 1) "Analysis Techniques and Status of the DONUT Experiment", Argonne HEP Seminar, 24 February 2004, Argonne National Laboratory, USA

TALKS AT WORKSHOPS (24)

- 24) "Dijet Resonance Searches in CMS", N. Saoulidou, Recent Developments in High Energy Physics and Cosmology 28 March-1 April 2018, National Technical University of Athens, Greece.
- 23) "Recent Exotic results with Jets+X from CMS", N. Saoulidou, Recent Developments in High Energy Physics and Cosmology 12-15 May 2016, University of Thessaloniki, Greece.
- 22) "Particle Flow Jet Identification criteria with CMS at 13 TeV", M. Diamantopoulou, N. Saoulidou and E. Tziaferi, Recent Developments in High Energy Physics and Cosmology 12-15 May 2016, University of Thessaloniki, Greece.
- 21) "An alternative approach for the Standard Model Background estimation in the Dijet Resonance Search with CMS at 13 TeV", D. Karasavvas, N. Saoulidou and E. Tziaferi, Recent Developments in High Energy Physics and Cosmology 12-15 May 2016, University of Thessaloniki, Greece.
- 20) "High Granularity Calorimetry and Particle Flow for the CMS Phase 2 Upgrade", Andreas Psallidas, N. Saoulidou, Recent Developments in High Energy Physics and Cosmology 14-18 April 2015, University of Athens, Greece.
- 19) "Dijet resonance searches at CMS", (N. Saoulidou, E. Tziaferi), Recent Developments in High Energy Physics and Cosmology 14-18 April 2015, University of Athens, Greece.
- 18) "Third generation SUSY searches at CMS", Recent Developments in High Energy Physics and Cosmology 8-10 May 2014, Chora-Naxos, Greece.
- 17) "Recent QCD results from CMS", Recent Developments in High Energy Physics and Cosmology 25-28 April 2013, Univ. of the Aegean, Chios, Greece.
- 16) "Searches for SUSY in events with two opposite-site leptons and missing transverse energy with the CMS detector", Recent Developments in High Energy Physics and Cosmology 25-28 April 2013, Univ. of the Aegean, Chios, Greece.
- 15) "Jet results from ATLAS and CMS", Working Group on Electroweak precision measurements at the LHC, 15-16 April 2013, CERN, Geneva Switzerland.

- 14) “Exciting Research at Fermilab”, Niki Saoulidou, Rob Roser, Michael Crisler, American Association for the Advancement of Science (AAAS), American Association of Physics Teacher (AAPT), Winter Meeting February 12-16, 2009 Chicago, Illinois (Talk given by D. Schmitz on my behalf)
- 13) “MINOS oscillation results from the first two years of running and future neutrino oscillation experiments” at the XXVI Workshop on Recent Developments in High Energy Physics and Cosmology, Ancient Olympia, 16-19 April 2008.
- 12) “Dual Readout Calorimeter for the ILC Detector”, Joint Meeting of the American Linear Collider Physics Group, Fermi National Accelerator Laboratory, Batavia, Illinois, USA, 22-26 October 2007
- 11) “Characterization of Silicon Photo-detectors”, G. Mavromanolakis, A. Para, N. Saoulidou, Novel Photo Detectors Workshop 2007, Kobe Japan
- 10) “Planar Dual Readout Calorimetry Studies and Progress Report”, G. Mavromanolakis, A. Para, N. Saoulidou, H. Wenzel, Shin-Shan Yu, Tianchi Zhao, 2007 International Linear Collider Workshop, DESY, Hamburg, Germany, May 30 - June 3 2007
- 9) “USA Neutrino Long Baseline Study”, International Design Study for the Neutrino Factory CERN, 29th March 2007
- 8) “The Beam Matrix Method to perform the Near-Far Extrapolation in MINOS”, Joint Meeting of Pacific Region Particle Physics Communities October 29th-November 3rd, 2006
- 7) “Status of the MINOS Experiment”, Fermilab Users Meeting 2005, 8-9 June 2005, Fermi National Accelerator Laboratory, Batavia Illinois, USA
- 6) “Analysis Techniques and Status of the DONUT experiment”, American Physical Society April Meeting 2004, 1-4 May 2004, Denver Colorado, USA
- 5) “Status of the MINOS Experiment”, American Physical Society April Meeting 2004, 1-4 May 2004, Denver Colorado, USA
- 4) “DONUT: Status and Analysis”, Current Developments in High Energy Physics, The Annual Meeting of the Hellenic Society for the study of High Energy Physics HEP 2002 25-27 April, Univ. Of Patras, Greece
- 3) “Neutrino Analysis Techniques for the DONUT Experiment”, Current Developments in High Energy Physics, The Annual Meeting of the Hellenic Society for the study of High Energy Physics HEP 2001 6-8 April Univ. Of Heraklion, Crete, Greece
- 2) “DONUT: EMCAL and Analysis Status”, Current Developments in High Energy Physics, The Annual Workshop of the Hellenic Society for the study of High Energy Physics. HEP 2000 20-23 April, Univ. Of Ioannina, Greece

PUBLICATION SUMMARY: Generated on 2022-14-04

Papers	1,171	1,111
Citations	136,130	133,308
h-index 	173	170
Citations/paper (avg)	116.3	120

PUBLICATIONS IN REFEREED JOURNALS WITH SIGNIFICANT/MAJOR PERSONAL INVOLVEMENT AND CONTRIBUTIONS (33)

- 33) Search for resonant and non-resonant production of pairs of identical dijet resonances in pp collisions at $\sqrt{s} = 13$ TeV, CMS Collaboration, **CMS-PAS-EXO-21-010 (to be submitted to JHEP), 2022**
CERN-CDS: <http://cds.cern.ch/record/2803669>.
- 32) Prospects for the measurement of $t\bar{t}H$ production in the opposite-sign dilepton channel at $\sqrt{s} = 14$ TeV at the High-Luminosity LHC, **CMS-PAS-FTR-21-002, CERN-CDS: <http://cds.cern.ch/record/2804006>**, contribution to Snowmass White Paper Contribution: Physics with the Phase-2 ATLAS and CMS Detectors, The ATLAS and CMS Collaborations, **to appear in the arXiv soon, 2022**
- 31) Pileup mitigation at CMS in 13 TeV data, The CMS Collaboration, **JINST 15 (2020) 09, P09018, 120 citations.**

- 30) Search for high mass dijet resonances with a new background prediction method in proton-proton collisions at $\sqrt{s} = 13$ TeV, CMS Collaboration (Albert M. Sirunyan et al.), **JHEP 05 (2020) 033, 105 citations**
- 29) Search for narrow and broad dijet resonances in proton-proton collisions at $\sqrt{s}=13$ TeV and constraints on dark matter mediators and other new particles, CMS Collaboration (Albert M. Sirunyan et al.), **JHEP 1808 (2018) 130, 184 citations.**
- 28) Search for dijet resonances in proton-proton collisions at $\sqrt{s} = 13$ TeV and constraints on dark matter and other models, CMS Collaboration, **Phys.Lett. B769 (2017) 520-542, 186 citations.**
- 27) HGCAL: A high Granularity Calorimeter for the endcaps of CMS at HL-LHC, CMS Collaboration (A.M. Magnan (Imperial Coll., London) for the collaboration). 2017, **JINST 12 (2017) no.01, C01042**, Cited by 22 records
- 26) Search for narrow resonances decaying to dijets in proton-proton collisions at $\sqrt{s}=13$ TeV CMS Collaboration (Vardan Khachatryan (Yerevan Phys. Inst.) et al.). Dec 3, 2015. 17 pp., **Phys.Rev.Lett. 116 (2016) no.7, 071801, 208 citations**
- 25) Searches for supersymmetry based on events with b jets and four W bosons in pp collisions at 8 TeV CMS Collaboration (Vardan Khachatryan (Yerevan Phys. Inst.) et al.) **Phys.Lett. B745 (2015) 5-28, 41 citations**
- 24) Search for supersymmetry in events with opposite-sign dileptons and missing transverse energy using an artificial neural network, CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) et al.). Jan 2013. **Phys. Rev. D 87 (2013) 072001** , Cited by 22 records
- 23) Measurements of differential jet cross sections in proton-proton collisions at $\sqrt{s}=7$ TeV with the CMS detector CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) et al.). Dec 2012. **Phys.Rev. D87 (2013) 11, 119902, 239 citations**
- 22) Determination of Jet Energy Calibration and Transverse Momentum Resolution in CMS, CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) et al.). Jul 2011. **JINST 6 (2011) P11002, 1325 citations**
- 21) Measurement of the Inclusive Jet Cross Section in pp Collisions at $\sqrt{s}=7$ TeV, CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) et al.). Jun 2011. 24 pp. **Phys.Rev.Lett. 107 (2011) 132001, 199 citations**
- 20) Measurement of the differential dijet production cross-section in proton-proton collisions at $\sqrt{s}=7$ TeV CMS Collaboration (Serguei Chatrchyan (Yerevan Phys. Inst.) et al.). Apr 2011. 20 pp. **Phys.Lett. B700 (2011) 187-206, 96 citations**
- 19) Fermilab's intensity frontier, Andre de Gouvea (Northwestern U.), Niki Saoulidou (Fermilab). 2010. 26 pp. **Ann.Rev.Nucl.Part.Sci. 60 (2010) 513-538, 22 citations**
- 18) Search for sterile neutrino mixing in the MINOS long baseline experiment, MINOS Collaboration (P. Adamson (Fermilab) et al.). Jan 2010. 18 pp. **Phys.Rev. D81 (2010) 052004, 120 citations**
- 17) Neutrino and Antineutrino Inclusive Charged-current Cross-Section Measurements with the MINOS Near Detector MINOS Collaboration (P. Adamson (Fermilab) et al.). Oct 2009. 33 pp. **Phys.Rev. D81 (2010) 072002, 169 citations**
- 16) Search for muon neutrino to electron-neutrino transitions in MINOS MINOS Collaboration (P. Adamson (Fermilab) et al.). Sep 2009. 5 pp. **Phys.Rev.Lett. 103 (2009) 261802, 89 citations**
- 15) Search for active neutrino disappearance using neutral-current interactions in the MINOS long-baseline experiment, MINOS Collaboration (P. Adamson (Fermilab) et al.). Jul 2008. 5 pp. **Phys.Rev.Lett. 101 (2008) 221804, 87 citations**
- 14) Measurement of Neutrino Oscillations with the MINOS Detectors in the NuMI Beam, MINOS Collaboration (P. Adamson (Fermilab) et al.). Jun 2008. 5 pp. **Phys.Rev.Lett. 101 (2008) 131802 , 535 citations**
- 13) The Magnetized steel and scintillator calorimeters of the MINOS experiment MINOS Collaboration (D.G. Michael (Caltech) et al.). May 2008. 87 pp. **Nucl.Instrum.Meth. A596 (2008) 190-228, 375 citations**
- 12) Combining CPT-conjugate neutrino channels at Fermilab Andreas Jansson (Fermilab), Olga Mena (INFN, Rome & Rome U.), Stephen J. Parke, Niki Saoulidou (Fermilab). Nov 2007. 21 pp. **Phys.Rev. D78 (2008) 053002, 34 citations**
- 11) A Study of Muon Neutrino Disappearance Using the Fermilab Main Injector Neutrino Beam

MINOS Collaboration (P. Adamson (Fermilab & University Coll. London) et al.). Nov 2007. 57 pp.

Phys.Rev. D77 (2008) 072002, 285 citations

10) Momentum measurement of secondary particle by multiple Coulomb scattering with emulsion cloud chamber in DONuT Experiment K. Kodama (Aichi U. of Education), N. Saoulidou, G. Tzanakos (Athens U.), B. Baller, B. Lundberg, R. Rameika (Fermilab), J.S. Song, C.S. Yoon, S.H. Chung (Gyeongsang Natl. U.)

Nucl.Instrum.Meth. A574 (2007) 192-198, 23 citations

9) Measurement of neutrino velocity with the MINOS detectors and NuMI neutrino beam

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