



## Professor Katerina D. Zachariadou Curriculum Vitae

### 1. Personal Data

Birthdate: September 1, 1965, Athens, Greece

Faculty: Professor. Digital & Embedded Systems Division, Department of Electrical and Electronics Engineering, Faculty of Engineering, University of West Attica, Athens, Greece

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URL Electrical & Electronics Engineering Department, University of West Attica: <https://eee.uniwa.gr/el/personnel-el/dep-el/kathigites>

Electronics & Computer Technologies Lab: <http://ectlab.eee.uniwa.gr/index.php/en/>

Researchgate [https://www.researchgate.net/profile/Katerina\\_Zachariadou](https://www.researchgate.net/profile/Katerina_Zachariadou)

LinkedIn <https://www.linkedin.com/in/katerina-zachariadou>

GoogleScolar: <https://scholar.google.com/zachariadou>

Inspire HEP: <https://inspirehep.net/zachariadou>

### 2. Academic qualifications

2000 Postgraduate School: CERN School of Computing, Marathon, Greece

#### Topics:

Storage and Management Systems for data analysis, OO Design, and Implementation (Java analysis studio, Geant4 simulation package), Distributed Computing architectures for GRID applications

1999 Postgraduate School: CERN School of Computing, Warsaw University, Stare Jablonki, Poland (*invited participation*)

#### Topics:

Internet Software Technologies (Distributed Computing applied to Physics Analysis), Web-based Transaction Technologies (HTML, JavaScript, CGI interface), Advanced Web Software Topics (Dynamic HTML, XML, SMIL languages), Software Building (software technologies and packages relevant for LHC experiments), LHC Experiments Data Communication & Processing Systems (requirements and concepts of trigger and readout systems at LHC experiments),

|           |  |
|-----------|--|
|           | Quantum Technologies, Data storage technologies at LHC.  |
| 1991-1995 | Ph.D. in High Energy Physics, National Technical University of Athens (NTUA), Greece   |
| 1994      | Postgraduate School: CERN School on High Energy Physics, Sorrento, Italy ( <i>invited participation</i> )  |
|           | <b>Topics:</b><br>Field theory, Standard model, Physics beyond the standard model, Quantum Chromodynamics, CP violation, Search for gravitational waves, Stellar death   |
| 1992      | 4 <sup>th</sup> Postgraduate School in High Energy Physics, Corfu, Greece  |
|           | <b>Topics:</b><br>Detectors and techniques for LHC experimentation, Cosmology, CP violation, QCD, Rare processes in the standard model and beyond, Black holes   |
| 1984-1989 | B.Sc. degree in Physics, Department of Physics, School of Physics and Mathematics, Aristotle University of Thessaloniki. Upper 2 <sup>nd</sup> class honors.<br><br>Undergraduate research in Nuclear Physics: Time-Dependent Radioactive concentrations of the fallout following the Chernobyl Reactor accident», C.Papastefanou, M. Manolopoulou, A. Ioannidou, K.Zachariadou, The Science of the Total Environment, 84 (1989) 283-289 |

### 3. Scholarships/Awards

|           |   |
|-----------|---|
| 1997-1999 | Two-years post-doctoral fellowship, Italian National Institute of Nuclear Physics (INFN), Galileo-Galilei University of Florence. |
| 1984      | National financial Award of excellence, Aristotle University of Thessaloniki  |
| 1991      | Four-year fellowship, National Research Center “Demokritos” (afters qualification exams) for PhD research.                        |

### 4. Short CV and Research Interests

Dr. A.S. Zachariadou holds a B.Sc. in Physics (1989) from Aristotle University of Thessaloniki and a Ph.D. from the National Technical University of Athens (1995). Her doctoral thesis was carried out through a grant for postgraduate studies (qualification exams) by the National Research Centre Demokritos and has been carried out at the ALEPH detector experiment at the European Centre of Nuclear Research CERN, Switzerland, where she specialized in Experimental Elementary Particle Physics or High Energy Physics (Physics of the building blocks of matter and their interactions).

Since 1995 she has conducted research work, through European or National research/educational programs and academic positions, by collaborating with several National Universities and Research Institutes and contributing to the research activities of international populous, scientific collaborations in the field of Particle, Astro-particle, and Nuclear Physics (mainly in the large-scale experiments of the European Centre of Nuclear Research CERN).

**Her research interests and her contribution to Research & Development** are mainly associated with experimental Particle, Astro-Particle, and Nuclear Physics:

-Detector technologies (instrumentation, simulation, electronics), mainly to detect high-energy particles produced by collisions in accelerators at CERN.

-Statistical techniques and computing methods for analyzing particle detectors' signals (searches for New Physics and unsolved problems in fundamental physics such as the matter-antimatter imbalance in the Universe and the unknown dark matter that makes up the majority of the Universe).

She has 21-years of experience in Higher Education as a paid educational associate and Faculty member at several National Universities and Higher Education Institutes. Since 2019, she has served as a Full Professor at the Electrical & Electronics Engineering Department, University of West Attica, Greece.

#### **Educational interests/contribution to education:**

##### **-Lecturing:**

(Underground topics in Physics for different disciplines and Sensors Technology. Postgraduate courses in the MSc programs “Internet of Things and Intelligent Environments” (2018-) and “Internetworked Electronic Systems” (2015-2018))

##### **-Authoring university Books/Volumes**

-Supervision of diploma and master theses aiming mainly to develop a) electronics systems for control and monitoring detectors and accelerators and b) innovative Physics laboratory devices.

-Organization, coordination, and supervision of the student's participation in the upgrade of the ATLAS experiment' electronics implemented at the laboratories of the European Organization for Nuclear Research, CERN.

##### **- Educational Technologies and Methods**

(Development of laboratory devices using low-cost software and hardware technologies  
Active Learning methods, hands-on labs.)

#### **Significant appointments:**

She is President of the Hellenic Association for the Study of High Energy Physics (HeSSHEP)

*(HeSSHEP consists of about 300 Greek scientists of National and International Universities and Research Centers who are conducting research work in Theoretical and Experimental High Energy Physics )*

#### **Scientific Outreach:**

She attaches particular importance to the outreach of Science and Technology (Invited Lectures for the public, related to the technological advances in the field of High Energy Physics, at cultural events of local associations, municipalities, and publishing houses).

### **5. Research Statistics (as of November 2021)**

Monographs: 2

Peer-Reviewed Journal Papers: 299

Detectors Technical Design Reports: 5

Peer-Reviewed Conference Proceedings: 49

Conference proceedings in press: 1

Peer-Reviewed Periodical editions: 3

Conference proceedings under review: 3

### **6. Citations and Impact Factors (as of November 2021)**

*(excluding self-citations of all authors)*

Databases of peer-reviewed literature:

Scopus Elsevier: Citations: 22625, h-index: 43

Inspire High Energy Physics-Inspire: h-index:61

Google Scholar: Citations 36627, h-index: 91

### **7. Professional Memberships/Significant Appointments**

2021- President of the Steering Board of the Hellenic Association for the Study of High Energy Physics (HeSSHEP)

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|-----------|--|
| 2021      | Member of Hellenic Nuclear Society-  |
| 2019-     | Deputy Representative of the UniWA Technical Associate Institute with the ATLAS experiment (CERN)                  |
| 2018-2021 | General Secretary of the Steering Board of the Hellenic Association for the Study of High Energy Physics (HeSSHEP) |
| 2017-2018 | Member of the Steering Board of HeSSHEP  |
| 2013-2015 | Member of the KM3NeT Strategic Project Board, Representative of the former Piraeus University of Applied Sciences  |
| 1991      | Member of HeSSHEP  |
| 1990-2019 | Member of Hellenic Physics Society   |

## 8. Faculty Positions

|           |  |
|-----------|--|
| 2019-     | Full Professor, Department of Electrical and Electronics Engineering, University of West Attica, Greece                                |
| 2018-2019 | Associate Professor, Electrical and Electronics Engineering Department, University of West Attica, Greece                              |
| 2015-2018 | Associate Professor, Department of Electronics Engineering, Piraeus University of Applied Sciences, Greece                             |
| 2013-2015 | Tenured Assistant Professor, Department of Electronics Engineering, Piraeus University of Applied Sciences, Greece                     |
| 2010-2013 | Adjunct Assistant Professor, Department of Physics, Chemistry and Materials Technology, Piraeus University of Applied Sciences, Greece |
| 2009-2010 | Lecturer, School of Physical Sciences, Hellenic Naval Academy, Greece  |

## 9. Educational Collaborations with Higher Education Institutions

|           |   |
|-----------|---|
| 2008-2009 | Adjunct Lecturer (employed under law 407/198), School of Physical Sciences, Hellenic Naval Academy, Greece                |
| 2004-2008 | Academic Staff, School of Physical Sciences, Hellenic Naval Academy, Greece   |
| 2001-2010 | Academic Staff, Department of Physics, Chemistry and Materials Technology, Piraeus University of Applied Sciences, Greece |
| 2001-2012 | Academic Staff, School of Science and Technology, Hellenic Open University, Greece  |

## 10. Research Memberships

### 10.1 Memberships in International Research Collaborations

|           |   |
|-----------|---|
| 2016-     | ATLAS experiment (A Toroidal LHC ApparatuS), CERN                                 |
| 1990-2011 | ALEPH experiment (A detector for LEP Physics), CERN                               |
| 1990-2010 | CMS experiment (Compact Muon Solenoid), CERN                                      |
| 2013-2015 | International Research Infrastructure Km3NeT (Kubic Kilometer Neutrino Telescope) |

|           |  |
|-----------|--|
| 2002-2007 | CAST experiment (Cern Axion Solar Telescope), CERN   |
| 1996-2002 | BABAR experiment, SLAC National Accelerator Laboratory, USA  |
| 1991-2002 | -RD20 collaboration (Development of High-Resolution Silicon Strip Detectors for Experiments at High Luminosity at LHC).<br>-ROSE RD48 collaboration (R&D On Silicon for future Experiments)<br>-ENDEASD (European Network on Defect Engineering of Advanced Semiconductor Devices) |

## **10.2 Research Collaborations with National and Foreign Research Centers and Higher Education Institutions (excluding the Home Institute)**

|           |   |
|-----------|---|
| 2020-     | Aristotle University of Thessaloniki, Department of Physics, Division of Nuclear and Astroparticle Physics (Research Associate)   |
| 2017-     | National Research Center for Nuclear Research "Demokritos," Institute of Nuclear and Elementary Particle Physics, Tandem accelerator laboratory (Research Associate)                                      |
| 2016-     | National and Kapodistrian University of Athens, Physics Department (collaboration for the ATLAS experiment)   |
| 2016-     | National Technical University of Athens, School of Applied Mathematical and Physics Science (collaboration for the ATLAS experiment)  |
| 2012-2014 | Hellenic Open University, School of Science and Technology (Research Associate)   |
| 2010-2012 | Greek Atomic Energy Commission, Research Associate  |
| 1999-2010 | National Center for Scientific Research "Demokritos," Institute of Nuclear and Elementary Particles (Research Associate)  |
| 2004-2006 | Aegean University, Research Associate   |
| 1996-1997 | French National Centre for Scientific Research (CNRS), Research Associate, French National Centre for Scientific Research (CNRS)-Laboratory d' Annecy-Le-Vieux, for Particle Physics (Research Associate) |

## **11. Positions of Responsibility & Administrative Services at the Home Institute**

*(at the University of West Attica and the former Piraeus University of Applied Sciences)*

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|-----------|--|
| 2019-     | Deputy Representative of the UniWA Associate Technical Institute of the ATLAS experiment at CERN   |
| 2019-     | Elected representative of the Digital and Embedded Systems Division' Faculty Professors in the Department of Electrical and Electronic Engineering General Assembly                        |
| 2019-     | Member of the Evaluation Committee for the Adjunct Academic Staff  |
| 2018-2020 | Secretary of the Division of Digital and Embedded Systems  |
| 2013-2015 | Representative of the former Piraeus University of Applied Sciences in the Institute Board (IB) of the International Research Infrastructures Km3NeT (Kubic Kilometer Neutrino Telescope). |
| 2013-     | Member of the Physics Laboratory Scientific Committee  |

|           |   |
|-----------|---|
| 2012-2018 | Scientific Responsible of the Physics-II Laboratory (Electromagnetism)  |
| 2012-2013 | Deputy Director of the Physics, Chemistry and Materials Technology General Department, School of Technological Applications, Piraeus University of Applied Sciences |
| 2011-2013 | Scientific Responsible of the Physics (Mechanics, Waves) Laboratory   |
| 2010-2013 | Member of the Evaluation Committee for the Adjunct Academic Staff   |

## 12. Organization of Research & Education at the Home Institute

(the University of West Attica and the former Piraeus University of Applied Sciences)

### 12.1 Research

- 2019 Co-authorship and submission of a proposal for the University of West Attica to join the International Scientific Community of the ATLAS experiment (CERN) as a Technical Associate Institute in the field of Technology. The Council of the ATLAS experiment (177 Universities and Research Institutes from 38 countries) unanimously approved the Letter of Intent, and a Memorandum of Understanding was signed by the CERN Research Director and the Rector of the University of West Attica in September 2019.
- 2016-2019 Initiative and accomplishment of a collaboration of the Electronics and Computer Technologies Laboratory (UniWA Electrical & Electronics Engineering Department) with the ATLAS-NSW Electronics group of the ATLAS experiment, the National Technical University of Athens, and the University of Athens, aiming to participate in the development and performance evaluation of the NSW detecting system' new electronics.
- 2013-2015 Initiative and accomplishment of forming a research group (KM3NeT-GR-Teipir) consisting of 19 Faculty members from four departments of the former School of Technological Applications, Piraeus University of Applied Sciences. The KM3NeT-Gr-teipir) has become a member of the Hellenic Scientific Network KM3NeT-Gr Network (five National Universities and two Research Centres) and in the European Scientific Consortium KM3NeT (250 Research Institutes from 40 countries).In the M3NeT-Gr-teipir scientific team, two of the former School of Technological Applications' Departments were responsible for developing, producing, and controlling optical submarine detection units (Electronics Engineering Department)and developing a renewable energy and energy storage system (Mechanical Engineering Department).

### 12.2 Education

- 2019 Organization, coordination, and supervision of students' participation in ATLAS experiment at the European Nuclear Research Centre CERN (electronics commissioning and integrations sites).
- 2010- Enhancement of the Physics Laboratory (lab infrastructure and development of computer-based laboratory exercises).
- 2012 Initiative and accomplishment of the Physics Laboratory certification as an ionizing radiation research laboratory to enable research and development of laboratory courses related to radioactivity.

## 13. Synopsis of Current Research

As Faculty member of the Electronics & Computer Technologies research Lab (ECTLab), Department of Electrical & Electronics Engineering, University of West Attica:

-Serving as Deputy Leader of the ECTLab research group that participates in ATLAS experiment at CERN: development and testing of electronics systems to evaluate the performance of new electronics boards in the framework of the ATLAS experiment Phase-I and Phase-II upgrades (collaboration with CERN, National and

Kapodistrian University of Athens and National Technical University). *Under review in conference proceedings.*

-Searches for new physics with the ATLAS experiment at the LHC accelerator (CERN) using innovative statistical data analysis techniques (collaboration with the Physics Department of the Aristotle University of Thessaloniki, Greece). *Published in a peer-reviewed journal and conference proceedings.*

-Cost-effective control and monitoring of the NCSR-Demokritos Tandem accelerator using IoT wireless technologies (Collaboration with the NCSR-Demokritos Institute of Nuclear and Elementary Particles). *Under review in conference proceedings.*

-Development and Assessment of a Web-based Platform for teaching measurement uncertainties and linear regression. *Under review in conference proceedings.*

-Studies of teaching methodology and methods of student assessment in the physics laboratory (Active Learning), Department of Electrical & Electronics Engineering, University of West Attica

## 14. Research Distinctions

- 2012      The research work on developing a pixelated CdTe crystal device for gamma and X-ray detection was selected (*without submission*) and presented on the MIT online journal Technology Review. It was also selected (*without submission*) and presented (<https://news.softpedia.com/news/Camera-Can-Reconstruct-Radiation-Particles-Paths>) on the Softpedia website, one of the most popular websites that selectively presents the most outstanding achievements in the fields of Technology, science, and health.
- 2004      The research on the study of Micromegas technology detectors with an innovative readout system for its possible application in radiation diagnostics was selected and published in the "CERN Courier" journal in an article ("[Physics helps medicine gain a sharper view](#)").
- 1994      The research concerning the development (design, control, integration, and commissioning) of a device (real-time radiation monitoring system) for the detection of the radiation absorbed by the double-sided (silicon) microstrip detector (VDET) of the ALEPH experiment (which was destroying its electronic systems) and its connection to an electronic triggering system for controlled loss of the accelerator's bunches (Rapid Beam Loss Interlock System), was installed in the ALEPH detector and its capabilities proved decisive for the smooth operation of the experiment since no further damages have occurred during its entire ten-year operation (this research work has been part of the Ph.D. thesis)

## 15. Participation in National and European Programs

### 15.1 Research & Development Programs

- 2020-2021    Searches for new physics with the ATLAS experiment at the LHC accelerator (CERN) by using innovative statistical data analysis techniques (Aristotle University of Thessaloniki, Greece)
- 2014-2020    CALIBRA ΕΣΠΑ 2014-2020. "Cluster of Accelerator Laboratories for Ion Beam Research and Applications" (NCSR "Demokritos, Institute of Nuclear and Elementary Particle Physics")
- 2011-2014    ASTRONEU THALIS "Development and Applications of Novel Instrumentation and Experimental Methods in Astro-particle Physics" (Hellenic Open University)
- 2012-2013    SENS-ERA FP7-INCO-2011. "Strengthening Sensor Research Research Cooperation between Georgian Technical University and the European Research Area" (Piraeus University of Applied Sciences)
- 2008-2012    COCAE FP7-Security-2007-1. "Cooperation across Europe for Cd(Zn)Te based Security Instruments" (NCSR Demokritos. Institute of Nuclear & Elementary Particle Physics and

|           |  |
|-----------|--|
|           | Hellenic Atomic Energy Committee   |
| 2007-2008 | Hellenic General Secretary of Research and Technology, GSRT «Analysis of experimental data in Elementary Particle Physics and development/operation of distributed computing systems using Grid technology» (NCSR “Demokritos, Institute of Nuclear and Elementary Particle Physics) |
| 2004-2006 | ΕΠΕΑΚ-II ΠΥΘΑΓΟΡΑΣ Particle silicon detectors' studies, (Aegean University)  |
| 2003-2004 | Hellenic General Secretary of Research and Technology, GSRT "Physics with the CMS experiment at the CERN LHC" (NCSR “Demokritos, Institute of Nuclear and Elementary Particle Physics)   |
| 2003      | Hellenic General Secretary of Research and Technology GSRT, "Soil radiation survey - evaluation of results and management guidelines for the Olympic facilities of Elliniko," (NCSR “Demokritos, Institute of Nuclear and Elementary Particle Physics)                               |
| 2000-2001 | ΕΠΙΕΤ-II Hellenic General Secretary of Research and Technology, GSRT "Development of a system to study the radiation hardness of detection devices and materials in a radioactive environment," (NCSR “Demokritos, Institute of Nuclear Physics)                                     |

### **15.2 Educational Technologies & Methods Programs**

|           |   |
|-----------|---|
| 2000-2004 | TSRT European Commission within the framework of the action Preparatory and innovative actions- eLearning action plan DG EAC/25/01, "e-learning technology, Teaching Science with a Robotic Telescope" (NCSR Demokritos, Institute of Nuclear and Elementary Particles) |
| 2000      | ΣΕΠΠΕ-ΕΠΕΑΕΚ "National Robotic Telescope, e-learning technology" (NCSR Demokritos, Institute of Nuclear and Elementary Particles)   |
| 2000      | ΣΕΠΠΕ-ΕΠΕΑΕΚ "Introducing the experimental research process in high school. Methodology of analysis of experimental data and their introduction to fundamental concepts and laws"(NCSR Demokritos, Institute of Nuclear and Elementary Particles)                       |

### **16 Synopsis of Education Activities**

|       |  |
|-------|--|
| 2019- | Hellenic Open University, School of Sciences and Technology<br>Three-member Advisory Committee for Ph.D. thesis  |
| 2015- | University of West Attica, Electrical and Electronics Department and former Piraeus University of Applied Sciences, Electronics Engineering Department<br><u>-Postgraduate courses</u><br>--Sensors, Microsystems and Smart Devices in MSc Internet of Things and Intelligent Environments (2018-) (Lectures)<br>--Sensors and Micronets (BAN, PAN, LAN), in MSc Internetworked Electronic Systems (2015-2018) (Lectures)<br><u>-Master Thesis supervision</u><br>"Development and testing of electronic systems for the NSW detector of the ATLAS experiment at CERN"<br><u>-Undergraduate courses</u><br>Measurement System and Sensors (Lectures & Lab)<br><u>-Diploma Theses Supervision</u> |
| 2019- | University of West Attica, Electrical and Electronics Department, and former Piraeus<br><u>-Undergraduate Courses</u><br>--Physics (Mechanics, Waves) (Lectures)   |

|           |  |
|-----------|--|
|           | --Measurement Systems and Sensors (Lectures & Lab)   |
| 2000-2019 | Piraeus University of Applied Sciences, Departments of Electronics Engineering and Department of Mechanical Engineering<br><u>Undergraduate courses</u><br>--Physics (Lectures and Labs)<br>--Electrical Circuits-II (Lectures)<br><u>Diploma Theses Supervision</u> |
| 2001-2012 | Hellenic Open University, School of Sciences and Technology<br>Classical Physics (Lectures)  |
| 2004-2010 | Hellenic Naval Academy, Division of Sciences<br>--Electromagnetism (Lectures)<br>--Physics (Lectures and Labs)   |

## 17. Synopsis of novel laboratories development/Educational Research & Methods Activities

-Development of innovative laboratory devices using cost-effective technologies (web, sensors, microcontrollers) aiming to enhance students' conceptual knowledge on:

- (a) basic concepts of simulations, fitting techniques for the study of semiconductors
- (b) basic concepts of statistical measurement processing
- (c) basic concepts of oscillations

-Web-controlled laboratory exercises using the National Robotic Telescope 'Eudoxos'.

-Laboratory courses and educational methods using mechanical analogs to teach concepts and phenomena of the microcosm.

-Development and assessment of a Web-based Platform for teaching measurement uncertainties and linear regression

-Studies of teaching methodology and methods of student assessment in the physics laboratory (Active Learning), Department of Electrical & Electronics Engineering, University of West Attica

## 18 Synopsis of Research Activities

Studies of radiation detectors macroscopic characteristics to optimize their operation and dynamic range by developing/configuring simulations of their geometry and materials (applied in Cd(Zn)Te crystal detector with a large number of pixels and in silicon microstrip detectors for the CMS experiment at CERN)

Studies and evaluation of algorithmic techniques' performance for reconstructing the time sequence of the recorded information (hits) in detector layers to determine the position and energy of radioactive sources. Studies of iterative algorithms for image reconstruction of radioactive sources. Evaluation of algorithms for the position of radioactive sources (applied in Cd(Zn)Te crystal detector with a large number of pixels)

Experimental studies to evaluate the quality of the materials of the signal amplification/reading system and the selection of light guides (applied in CsI crystal calorimeter and photomultiplier amplification/reading for the BABAR experiment at SLAC (California)

Development of algorithmic techniques for the readout and signal processing of micromegas technology detectors having an innovative two-dimensional large-grid charge collection system to reduce the noise. estimation of design requirements for imaging in medicine (micro-chamber gas-micromegas technology detectors with an innovative two-dimensional large-grid charge collection system)

Experimental studies of the robustness of silicon detectors, silicon microstrip detectors of various technologies, and micromegas-type sensors in a radioactive environment (National and international research projects

Microscopic studies of the physical mechanisms of silicon detectors' aging under irradiation of various doses (for the CMS experiment)

Development (design, implementation, and commissioning) of an electronic system that emulates all the functions of the central trigger control unit and the data acquisition system of the CMS detector at CERN.

Development and operation of computing infrastructure for the Institute of Nuclear Physics of the CERN-Demokritos (local computer network of a large number of personal computers in UNIX environment (PC batch cluster machine) to meet the needs in terms of computing power and storage required for the research at the CERN detector facilities, for the calculation of physical properties and the detection of rare particles (DELPHI experiment at CERN)

Development and operation of a distributed computing system based on Grid technology (Grid Site GR-05 Demokritos) at the Institute of Nuclear and Particle Physics of the CERN-Demokritos, which is part of the international LCG Grid (170 computer networks in 42 countries) for the distribution and statistical processing of experimental data from the CERN detectors with users from the international scientific community involved in research on the CMS detector (User Guide "GR-05-DEMOKRITOS Grid Site User Guide")

Development and control of systems for detectors' data acquisition, and transmission using NIM, VME, FPGA technologies (ALEPH, CAST, ATLAS experiments at CERN)

Development of computational methods for processing the information recorded by CERN detectors (with the development of computer architecture and software technology) to calculate the physical quantities of particles and their interactions and search for new physics beyond the predictions of theoretical models. (ALEPH and DELPHI experiments at CERN)

## 19 Publications

### 19.1 Books/Volumes (3)

1. "Mechanics-Heat, 191 solved exercises", C. Moustakakis, K. Zachariadou (Chapter Heat) (taught in the Physics course of the Textile Engineering Department at the former Piraeus University of Applied Sciences the academic years 2006-2011)
2. "Physics of Flow and Optics," K. Zachariadou, A. Skountzos, Synchroni Ekdotiki, Athens 2012 (pages 485) (taught in the physics course of the former Mechanics Engineering Department of Piraeus University of Applied Sciences the academic years 2011-2014)
3. Measurement Systems and Sensors N. Stathopoulos, Arakynthos University Publications. (K. Zachariadou: Chapter: 9 "Ionizing Radiation Detection Sensors" (has been taught in the undergraduate course "Measurements and Sensors" since 2011).

### 19.2 Monographs (2)

1. Search for exclusive hadronic charmless b decays at LEP. Zachariadou K., Nuovo Cim.A109:815-820,1996
2. Rare B0s, B0d και Λb hadronic decays at the LEP accelerator/ALEPH experiment, Physics General Department National Technical University of Athens, 1995 (Ph.D. thesis).

### 19.3 Journal (Peer-Reviewed): 299

1. Time-Dependent Radioactive concentrations of the fallout following the Chernobyl Reactor accident, C.Papastefanou, M. Manolopoulou, A.Ioannidou, K.Zachariadou, The Science of the Total Environment,84 (1989)
2. "Evidence for the triple gluon vertex from measurements of the QCD color factors in Z decay into four jets" D. Decamp,..., Zachariadou K et al., Phys.Lett.B284:151-162,1992
3. "Measurement of  $a_s$  in hadronic Z decays using all-orders resummed predictions" Décamp D; ..., Zachariadou

4. "Measurement of B0-B0 mixing at the Z using a jet-charge method", Buskulic D, ..., Zachariadou K et al., Phys. Lett. B 284 (1992) 177-190
5. Search for a very light CP-odd neutral Higgs boson of the MSSM, Buskulic D, ..., Zachariadou K et al., Phys. Lett. B 285 (1992) 309-318
6. "Properties of hadronic Z decays and test of QCD generators" Buskulic D, ..., Zachariadou K et al., Z. Phys. C 55 (1992) 209-234
7. "Measurement of the production rates of  $\eta$  and  $\eta'$  in hadronic Z decays," Buskulic D,..., Zachariadou K et al., Phys. Lett. B 292 (1992) 210-220
8. Observation of the semileptonic decays of Bs and  $\Lambda b$  at LEP Buskulic D,..., Zachariadou K et al.,Phys. Lett. B 294 (1992) 145-156
9. Updated measurement of the average b hadron lifetime,Buskulic D,..., Zachariadou K et al. Phys. Lett. B 295 (1992) 174-186
10. A measurement of the b baryon lifetime Buskulic D,..., Zachariadou K et al. Phys. Lett. B 297 (1993) 449-458
11. Measurement of the  $b \rightarrow \tau^- \nu \tau^+$  branching ratio Buskulic D,..., Zachariadou K et al. Phys. Lett. B 298 (1993) 479-491
12. Measurements of mean lifetime and branching fractions of b hadrons decaying to  $J/\psi$  Buskulic D, ..., Zachariadou K et al. Phys. Lett. B 295 (1992) 396-408
13. Measurement of prompt photon production in hadronic Z decays Buskulic D,..., Zachariadou K et al. Z. Phys. C 57 (1993) 17-36
14. Search for CP violation in  $Z \rightarrow \tau\tau$  Buskulic D,..., Zachariadou K et al. Phys. Lett. B 297 (1993) 459-468
15. Measurement of the  $b \rightarrow \tau \nu_\tau X$  branching ratio Buskulic D,..., Zachariadou K et al. Phys. Lett. B 298 (1993) 479-491
16. A precise measurement of the tau lepton lifetime Buskulic D,..., Zachariadou K et al. Phys. Lett. B 297 (1993) 432-448
17. Search for particles with unexpected mass and charge in Z decays, Buskulic D,..., Zachariadou K et al. Phys. Lett. B 303 (1993) 198-208
18. Update of electroweak parameters from Z decays Buskulic D., Zachariadou K et al. Z. Phys. C 60 (1993) 71-82
19. Measurement of the tau polarisation at the Z resonance Buskulic D,..., Zachariadou K et al. Z. Phys. C 59 (1993) 369-386
20. Measurement of the strong coupling constant using tau decays Buskulic D,..., Zachariadou K et al. Phys. Lett. B 307 (1993) 209-220
21. Measurement of the B0 and B- meson lifetimes, Buskulic D,..., Zachariadou K et al. Phys. Lett. B 307 (1993) 194-208, Phys. Lett. B 325 (1994) 537-538 (errata)
22. Search for contact interactions in the reactions  $e^+e^- \rightarrow l^+l^-$  and  $e^+e^- \rightarrow \gamma\gamma$  Buskulic D,..., Zachariadou K et al. Z. Phys. C 59 (1993) 215-230
23. Search for high mass photon pairs in  $e^+e^- \rightarrow f\bar{f} \gamma\gamma$  ( $f = e, \mu, \tau, \nu, q$ ) at LEP Buskulic D,..., Zachariadou K et al. Phys. Lett. B 308 (1993) 425-434
24. An experimental study of  $\gamma\gamma \rightarrow$  hadrons at LEP Buskulic D,..., Zachariadou K et al. Phys. Lett. B 313 (1993) 509-519
25. First measurement of the Bs meson mass Buskulic D, ..., Zachariadou K et al. Phys. Lett. B 311 (1993) 425-436 (Citations: 4)
26. Search for the standard model Higgs boson Buskulic D,..., Zachariadou K et al. Phys. Lett. B 313 (1993) 299-311
27. Observation of the time dependence of B0dB0dbar mixing Buskulic D,..., Zachariadou K et al. Phys. Lett. B 313 (1993) 498-508

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