

## Curriculum Vitae

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### Education:

1. 1<sup>o</sup> Lyceum of Ioannina, Lyceum certificate (1981).
2. University of Ioannina, Physics Department, Bachelor's degree in Physics (1985).
3. University of Ioannina, Physics Department, PhD in Physics (January 1992). Thesis Title: "Data analysis and extraction of the asymmetry in the neutral kaon decays to two charged pions using kinematical fits", doi: [10.12681/eadd/1914](https://doi.org/10.12681/eadd/1914).

### Employment:

1. Postgraduate Scholar (EMY), University of Ioannina, Physics Department, (1985 – 1991).
2. Unpaid Associate (1986 – 1991), CERN-PPE, CH-1211, Geneva 23, Switzerland. Participating to the CPLEAR (PS 195) experiment at CERN.
3. Military Service (1992 – 1993).
4. Post Doc, University of Basle Switzerland. Participating to the following CERN experiments: CPLEAR (PS 195), FEAT (Energy Amplifier) και TARC (PS 211). (1994 – 1996).
5. CERN Fellow, CERN Experimental Division. Participating to the CPLEAR (PS 195) experiment at CERN. (1996 – 1998).
6. Research Associate, University of Basle Switzerland. Participating to the following CERN experiments: DIRAC (PS 212), CMS και CPLEAR (PS 195). (1999 – 2000).
7. Assistant Professor, Physics Department, University of Ioannina. (2000 - 2008).
8. Associate Professor, Physics Department, University of Ioannina. (2008 - 2017).
9. Professor, Physics Department, University of Ioannina. (2017 - today)

### Research Interests:

1. Experimental High Energy Physics.
2. Jet Physics and Quantum Chromodynamics studies.
3. Detectors and electronics for HEP experiments.
4. Data acquisition and trigger systems development for HEP experiments.

### Teaching:

#### Undergraduate level:

- Electromagnetism and Laboratories
- Modern Physics (Relativity and Quantum Mechanics)
- Waves and Optics Labs
- Modern Physics Labs
- Programming Languages (C, C++, ROOT)

#### Graduate level:

- Digital design
- Programmable electronics
- Statistical Analysis of experimental data (C++)

Student supervision:

- Undergraduate diploma thesis 14 students
- Master thesis 9 students
- PhD thesis 5 students.

### Research

My research activities focus in the field of Experimental High Energy Physics. Since 1986 I participated to the following CERN experiments:

1. The CPLEAR (PS195) experiment (1986-2001)
2. The FEAT experiment (1994)
3. The TARC (PS211) experiment (1996)
4. The DIRAC (PS212) experiment (1999-2005)
5. The CMS experiment (1999 - today)

Scientific activity in brief:

- The CPLEAR (PS195) experiment (1986-2002). Design and construction of the Particle Identification Detector and the Electromagnetic Calorimeter. Development of the slow control and the electromagnetic calorimeter DAQ systems. Data analysis: measurement of the CP violation parameter  $\eta_{+-}$ , measurement of the T and CPT violation parameters  $Re(\delta)$ ,  $Re(\varepsilon)$  and  $Im(\delta)$ .
- The FEAT experiment (1994). Development of a semi-automatic system for solid state nuclear track detectors. Data analysis for the evaluation of the energy gain factor for a sub-critical Uranium reactor using protons from the Proton Synchrotron of CERN.
- The TARC (PS211) experiment (1996). Development of the experiment DAQ system. Design, construction, and development of a  $^3\text{He}$  scintillation detector. Data analysis for the experimental verification of neutron phenomenology in lead and of transmutation by adiabatic resonance crossing in accelerator driven systems (using the proton PS beam of CERN with energies 2.5 and 3.57 GeV).
- The DIRAC (PS212) experiment (1999-2005). Design and construction of a first level trigger system (Dirac Neural Network Atom - DNA) based on neural networks. Data analysis and evaluation of the main background of pionic  $\pi^+\pi^-$  states emerging from the decays of charged Kaons into three charged pions.
- The CMS experiment (1999 - today).
  - Development of the silicon strip detectors for the CMS Preshower. Development, functionality test and noise studies for the first silicon strip detector prototypes. Studies of the Preshower Si strip sensor performance under high irradiation. Tests for the Si sensors and the front-end microchips (PACE3) of the CMS Preshower. Data analysis collected with 150GeV muons with a Preshower prototype. Design and construction of the Data Concentrator Card (ES-DCC) for the Preshower.
  - Measurement of the ratio  $R_{32}$  of 3-jet to 2-jet cross sections and the first evaluation of the strong coupling constant  $\alpha_S$  at the TeV scale. (Phys. Lett. B 702 (2011) 336 and Eur. Phys. J. C73 (2013) 2604)
  - Studies of new physics in high-jet multiplicity and small missing  $E_T$  events in pp collisions at  $\sqrt{s} = 8$  TeV. Studies for the discovery of hypothetical Colorons, Axiguons and Gluinos. (Phys. Lett. B 770 (2017) 257).
  - Analytical study of azimuthal correlations in 2-jet, 3-jet, and 4-jet events in pp collisions at  $\sqrt{s} = 8$  and 13 TeV. (Eur.Phys.J.C (2016) 76:536, Eur.Phys.J.C (2018) 78:566 and Eur.Phys.J.C(2019) 79:733)
  - Measurement of the differential production cross section of jets at energies  $\sqrt{s} = 7$  and 13 TeV in the center of mass system. Improvements of the Partonic

Distribution Functions (PDFs) and evaluation of the strong coupling constant  $\alpha_S$  (Eur.Phys. J. C (2015) 75:288 , Eur.Phys.J.C(2016) 76:451 and JHEP (2022) 142)

- Convener of the CMS Quantum Chromodynamics Group SMP-J (Standard Model - Jets) (2014-15)

#### Publications:

We present a full list of publications in the following two links:

<http://inspirehep.net/search?p=find+a+kokkas,+p>

[https://scholar.google.com/citations?hl=el&user=rBj\\_smoAAAAJ](https://scholar.google.com/citations?hl=el&user=rBj_smoAAAAJ)

#### Management:

- Member of the General Assembly of the Physics Department since 2001 participating in various committees as this of teaching programme, of Informatics and Computers, of evaluation of the teaching ability, of seminars, of Postgraduate studies in Physics, of Postgraduate Studies in Modern Electronic Technologies etc.
- Director of Atomic, Molecular, Nuclear and High Energy Physics Section (2010-13).
- Head of the Physics Department 2017-2022.

#### Research Programs:

- EPET II 98MIK-2: Development of DAQ systems, 1999-2001.
- EPET II 98MIK-10: Design , development and test of silicon detectors, 1999-2001.
- EPET II 98MIK-25: Test and DAQ system of silicon detectors, 1999-2001.
- Herakleitos: Research Grants with priority in Basic Research. "Development of a data acquisition and control system for the silicon sensors of the Preshower detector for the CMS experiment at CERN.", 2002-2006, (Scientific Responsible).
- THALIS: "Search for new physics with the ATLAS and CMS experiments at the LHC: NewPhysAtLHC", 2013-2015
- ARISTEIA: "Beyond the Standard Model at LHC", 2013-2015
- ELIDEK: "Standard Model and Beyond with the CMS Experiment at LHC" 2020-2023