

SHORT CV – H. Tsertos

(Status: January, 2017)



RESEARCH AND TEACHING PROFILE

Name: **Haralabos Tsertos**

Position: **Professor of Physics**

Department of Physics

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ACADEMIC QUALIFICATIONS:

1985: Ph.D in Physics at the Technical University Munich (TUM), Germany

1980: M.Sc in Physics at the Technical University Munich (TUM), Germany

1977: B.Sc in Physics at the Aristotle University of Thessaloniki, Greece

PROFESSIONAL CAREER:

2005– present: Professor of Physics at the Department of Physics of the University of Cyprus.

1997– 2005: Associate Professor of Physics at the Department of Physics of the University of Cyprus.

1993– 1997: Assistant Professor of Physics at the Department of Natural Sciences of the University of Cyprus

1988 – 1993: Senior Research Associate at the Gesellschaft für Schwerionenforschung (GSI) Darmstadt, Germany.

1986 – 1988: Post Doctoral Research Fellow at the Gesellschaft für Schwerionenforschung (GSI) Darmstadt, Germany.

MAIN RESEARCH INTERESTS AND EXPERTISE

- **Modern experimental Nuclear Physics with heavy ions at relativistic energies.**
- **Particle detectors; Monte Carlo simulation techniques; high performance computing systems.**
- **Nuclear Astrophysics and Cosmology.**
- **Applications of Nuclear Radiation: Natural Radioactivity, XRF Spectroscopy, Mossbauer Spectroscopy.**
- **First gamma-radioactivity maps and radon maps in Cyprus**
(See e.g. http://www-np.ucy.ac.cy/radio_isotopes/start.html)

FUNDING OF RESEARCH GRANTS

1. “Experiments at the Heavy-Ion Research Center of GSI”

A research proposal funded by the University of Cyprus (1995-1998).

About 90,000 euro were approved for a Post-Doctoral position, computer equipment and traveling costs.

2. Member of an European Network (within the TMR program contracts

ERBCHR--CT94--0634 and ERBCIPD--CT94--0091), located at GSI.

About 350,000 Euro have been approved from which I got (as a subcontractor) about 20.000 Euro, mainly for traveling costs.

3. “The International Experiment HADES at the Heavy-Ion Research Center of GSI ”

A research program funded by the University of Cyprus (2000-2005).

A total of about 120,000 Euro were approved for our participation in the HADES experiment, for a Post-Doctoral position, computer equipment and traveling costs.

4. “HADES and secondary beams” EC-Funding program of Guest researchers of GSI.

A total of 20 person-days and additional travel and accommodation expenses have been granted (2000 - 2003).

5. “Detection and determination of the activity of environmental radioisotopes in various places of Cyprus” - “The Radioisotopes Project in Cyprus”. A total amount of about 85,000 Euro was granted by the Cyprus Research Promotion Foundation (2001-2003).

6. “Installation of a High-Performance Linux Cluster for analysis and simulations of complex data in physics experiments ”

A total amount of about 150,000 Euro was granted by the University of Cyprus (2002- 2003).

7. “HADES and secondary beams” EC-Funding program of Guest researchers of GSI.

A total of 30 person-days and additional travel and accommodation expenses have been granted (2004 - 2006).

8. I3HP FP6 Program” Transnational Access to Research Infrastructures (TARI)

(Contract N. RII3-CT-2004-506078). EU-Funding program of guest researchers of GSI. A total of 30 person-days and additional travel and accommodation expenses have been granted for this year.

9. “Studying nuclear matter under extreme conditions of high baryonic density and high temperature - The HADES and the CBM experiments at GSI Darmstadt, Germany”

An internal research programme funded by the University of Cyprus, about 127,000 euro were granted mainly for a post doc position and travelling costs (2005 –2008).

10. “Dilepton Analysis of $^{12}\text{C}+^{12}\text{C}$ Collisions at 1A GeV”, AIONE/0505/01

A total amount of about 97,000 euro, Research Promotion Foundation (Cyprus) (2005-2008).

11. “Upgrade of the existing High-Performance Linux Cluster”, EPYAN/0506/06

A total amount of about 126,000 euro, Research Promotion Foundation (Cyprus) (2006-2011).

12. “Studying nuclear matter under extreme conditions of high baryonic density and high temperature - The HADES experiments at GSI Darmstadt, Germany”

An internal research programme of the University of Cyprus funded by the Cyprus Leventis Foundation, about 70,000 granted mainly for a post doc position and travelling costs (2011 –2013).

13. 3411-23100:

The International Experiment HADES at the Research Centre of GSI;31/12/14.

14. “Μεταδιδακτορικοί Ερευνητές”

Mössbauer Spectroscopy: Application in Thalassaemia Research; Funded by the University of Cyprus 10/9/15 - 10/09/17.

15. “⁵⁷Fe Mössbauer Spectroscopy studies about Thalassaemia using samples of human-blood and lab-mice organs”. An internal research programme funded by the University of Cyprus (Acronym “MoessLab”) 1/1/17-31/12/18.

CONFERENCES

Organization and co-funding of the main HADES Collaboration Meeting XVIII, Oct. 30 – Nov. 4, 2007, Ayia Napa, Cyprus (80 participants)

MAIN ADMINISTRATIVE DUTIES

- Chairman of the Department of Physics (2002)
- Vice Dean of the Faculty of Pure and Applied Sciences (2001-2002)
- Vice Dean of the Faculty of Pure and Applied Sciences (2002-2005)
- Member of the Senate of the University of Cyprus (2001-2002)
- Member of the Senate of the University of Cyprus (2003-2004)
- Head of the Nuclear Physics Research Laboratory of the Department of Physics (1995-present).
- Member of the Senate of the University of Cyprus (20013-20014)

INTERNATIONAL COLLABORATIONS

- Founding member of the international collaboration HADES at GSI Darmstadt, Germany. (The HADES Collaboration is composed of 18 institutions from 9 European countries and has presently about 120 members).
- Member of the HADES Collaboration Board Committee (1995-present).
- Member of an external evaluation committee of the Greek higher-education institutions (2010 -).

- Recent collaboration in Moessbauer Spectroscopy: University of Ioannina, Department of Physics, Mössbauer Laboratory. Department of Thalassaemia – Cyprus Institute of Neurology and Genetics. Nicosia Thalassaemia Centre at Archbishop Makarios III Hospital.

TEACHING RESPONSIBILITIES

Semester Courses at the University of Cyprus

- **PHY114** - University Physics Experiments I
(Students of physics/chemistry of first year, 1994 – 1997, 2003).
- **PHY231**-Electromagnetism I
(Students of physics of second year, 1995 - 2013).
- **PHY235**-Electromagnetism II & Special relativity
(Students of physics of second year, 2014 -).
- **PHY321**-Nuclear Physics
(Students of physics of third/fourth year, 1997 -).
- **PHY322**-Advanced Experiments II, (fundamental atomic and nuclear physics experiments)
(Students of physics of third/fourth year, 1997 -).
- **PHY811**-Graduate Experimental Physics (part I, Techniques and Experiments in Nuclear Physics) (Graduate students, 1999 -).
- **PHY658**–Physics of hot and dense nuclear matter (Special graduate course)
- **PHY659**– Advanced Subjects in Nuclear Physics (Special graduate course)
- **PHY663**–Measurement and detection techniques of nuclear radiation (Special graduate course)
- **PHY 675** - Principles of Mössbauer Spectroscopy (Special Graduate Course)
- **PHY411-412** Diploma thesis (one year final project).
Supervision, on an average, of 2 diploma students per year.

RECENT PUBLICATIONS (2012-2016)

1. **A first study on iron complexes from blood and organ samples of thalassaemic and normal lab-mice via Mössbauer Spectroscopy**
George Charitou, Vlassis Petousis, Charalambos Tsertos, et al. (2016), submitted in European Biophysical Journal
2. **Λ p interaction studied via femtoscopy in p + Nb reactions at $\sqrt{s_{NN}}=3.18$ GeV**

HADES Collaboration, *Physical Review C-Nuclear Physics*, **94(2)**; **025201** (2016); DOI: 10.1103/PhysRevC.94.025201

- 3. Statistical hadronization model analysis of hadron yields in p + Nb and Ar + KCl at SIS18 energies**
HADES Collaboration, *European Physical Journal A*, **52(6)**, **178** (2016); DOI: 10.1140/epja/i2016-16178-x.
- 4. Systematic grid-based radon concentration measurements in the urban areas of Cyprus.**
Erodotou, E., Socratous, M., Parpottas, Y., & Tsertos, H., *Journal of Geochemical Exploration*, **159** (2015), 20-32; doi:10.1016/j.gexplo.2015.08.001
- 5. Subthreshold Ξ^- production in collisions of p (3.5GeV)+Nb.**
HADES Collaboration, *Physical Review Letters*, **114(21)** (2015); doi:10.1103/PhysRevLett.114.212301
- 6. $K^*(892)^+$ production in proton-proton collisions at Ebeam=3.5 GeV.**
HADES Collaboration, *Physical Review C – Nuclear Physics*, **92(2)** (2015); doi:10.1103/PhysRevC.92.024903
- 7. Partial wave analysis of the reaction $p(3.5\text{GeV})+p \rightarrow pK+\Lambda$ to search for the " ppK^- " bound state.**
HADES Collaboration, *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*, **742** (2015), 242-248. doi:10.1016/j.physletb.2015.01.032
- 8. Study of the quasi-free $np \rightarrow np\pi+\pi^-$ reaction with a deuterium beam at 1.25 GeV/nucleon.**
HADES Collaboration, *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*, **750** (2015), 184-193. doi:10.1016/j.physletb.2015.09.016
- 9. Analysis of pion production data measured by HADES in proton-proton collisions at 1.25 GeV.**
HADES Collaboration, *European Physical Journal A* **51** (10) (2015), 1-12. doi:10.1140/epja/i2015-15137-5
- 10. Searching a Dark Photon with HADES**
HADES Collaboration, *Physics Letters* **B731** (2014) 265-271; DOI: 10.1016/j.physletb.2014.02.035
- 11. Baryon resonance production and dielectron decays in proton-proton collisions at 3.5 GeV**
HADES Collaboration, *European Physical Journal A* **50** (2014) 82; DOI: 10.1140/epja/i2014-14082-1
- 12. Associate K^0 production in p+p collisions at 3.5 GeV: The role of $\Delta(1232)^{++}$**
HADES Collaboration, *Physical Review* **C90** (2014) 1, 015202; DOI: 10.1103/PhysRevC.90.015202
- 13. Partial Wave Analysis of the Reaction $p(3.5\text{GeV})+p \rightarrow pK+\Lambda$ to Search for the " ppK^- "**
HADES Collaboration, *Physics Letters* **B742** (2015) 242-248; DOI:10.1016/j.physletb.2015.01.032
- 14. Medium effects in proton-induced K^0 production at 3.5 GeV**
HADES Collaboration), *Physical Review* **C90** (2014) 5, 054906; DOI: 10.1103/PhysRevC.90.054906
- 15. Baryon resonance production and dielectron decays in proton-proton collisions at 3.5 GeV**
HADES Collaboration, *European Physical Journal A* **50** (2014) 82; DOI: 10.1140/epja/i2014-14082-1
- 16. $PK+\Lambda$ final state: Towards the extraction of the p pK^- contribution**
HADES Collaboration, *Nuclear Physics* **A914** (2013) 60-68.
- 17. Inclusive pion and η production in p+Nb collisions at 3.5 GeV beam energy**
HADES Collaboration, *Physical Review* **C88** (2) (2013), art. no. 024904.
- 18. Baryonic resonances close to the $\bar{K}N$ threshold: The case of $\Lambda(1405)$ in pp collisions**

HADES Collaboration, *Physical Review* **C87** (2) (2013), art. no. 025201.

19. **First measurement of proton-induced low-momentum dielectron radiation off cold nuclear matter,**
HADES Collaboration, *Physics Letters* **B715** (4-5) (2012) 304-309.
20. **Systematic grid-wise radon concentration measurements and first radon map in Cyprus.**
G. Theodoulou, H. Tsertos, Y. Parpottas
Published in Radiation Measurements **47** (2012) 451-460.
DOI: [10.1016/j.radmeas.2012.03.019](https://doi.org/10.1016/j.radmeas.2012.03.019)
21. **Inclusive dielectron spectra in p+p collisions at 3.5 GeV kinetic beam energy**
Agakishiev G, *et al.* (HADES Collaboration)
Published in European Physical Journal A **48** (2012) 64.
DOI: [10.1140/epja/i2012-12064-y](https://doi.org/10.1140/epja/i2012-12064-y)
22. **Study of exclusive one-pion and one-eta production using hadron and dielectron channels in pp reactions at kinetic beam energies of 1.25 GeV and 2.2 GeV with HADES**
Agakishiev G, *et al.* (HADES Collaboration)
Published in European Physical Journal A **48** (2012) 74.
DOI: [10.1140/epja/i2012-12074-9](https://doi.org/10.1140/epja/i2012-12074-9)
23. **Determination of the $\Sigma(1385)$ $0/\Lambda(1405)$ ratio in p+p collisions at 3.5 GeV**
Agakishiev G, *et al.* (HADES Collaboration)
Published in Hyperfine Interactions **210** (2012) 45-51.
24. **Inclusive dielectron production in proton-proton collisions at 2.2 GeV beam energy**
Agakishiev G, *et al.* (HADES Collaboration)
Published in Physical Review **C85** (2012) 054005.
DOI: [10.1103/PhysRevC.85.054005](https://doi.org/10.1103/PhysRevC.85.054005)
25. **The HADES-at-FAIR project.**
K. Lapidus, *et al.* (HADES Collaboration)
Published in Physics of Atomic Nuclei **75** (2012) 589-593.
DOI: [10.1134/S1063778812050146](https://doi.org/10.1134/S1063778812050146)
26. **Inclusive dielectron production in proton-proton collisions at 2.2 GeV beam energy.**
Agakishiev G, *et al.* (HADES Collaboration)
Published in Physical Review **C85** (2012) 054005.
DOI: [10.1103/PhysRevC.85.054005](https://doi.org/10.1103/PhysRevC.85.054005)
27. **Study of exclusive one-pion and one-eta production using hadron and dielectron channels in pp reactions at kinetic beam energies of 1.25 GeV and 2.2 GeV with HADES.**
Agakishiev G, *et al.* (HADES Collaboration)
Published in European Physical Journal A **48** (2012) 74;
DOI: [10.1140/epja/i2012-12074-9](https://doi.org/10.1140/epja/i2012-12074-9)
28. **Production of $\Sigma^\pm \pi^\pm pK^+$ in p + p reactions at 3.5 GeV beam energy.**
Agakishiev G, *et al.* (HADES Collaboration)
Published in Nuclear Physics **A881** (2012) 178-186.
DOI: [10.1016/j.nuclphysa.2012.02.009](https://doi.org/10.1016/j.nuclphysa.2012.02.009)
29. **Baryonic resonances close to the $\bar{K}N$ threshold: The case of $\Sigma(1385)^+$ in pp collisions.**
Agakishiev G, *et al.* (HADES Collaboration)
Published in Physical Review **C85** (2012) 03520.
DOI: [10.1103/PhysRevC.85.035203](https://doi.org/10.1103/PhysRevC.85.035203)

(Most of the publications can be obtained from the [SCOPUS](#) and [SPIRES databases](#).)

Conference Proceedings (2012-2016)

2. **Strange hadron production at SIS energies: An update from HADES**
HADES Collaboration. *Published in Journal of Physics: Conference Series* 668(1), 012022 (2016).
3. **Studying ρ -N couplings with HADES in pion-induced reactions**
HADES Collaboration. *Published in EPJ Web Conf.* 130 (2016) 07021; DOI: [10.1051/epjconf/201613007021](https://doi.org/10.1051/epjconf/201613007021); Conference: C16-06-02 Proceedings.
4. **Exploring neutron detection with HADES**
HADES Collaboration. *Published in J.Phys.Conf.Ser.* 742 (2016) no.1, 012033; DOI: [10.1088/1742-6596/742/1/012033](https://doi.org/10.1088/1742-6596/742/1/012033); Conference: C16-02-14.1 Proceedings.
5. **Resonance Production and Decay in Proton and Pion Induced Collisions with HADES**
HADES Collaboration. *Published in JPS Conf.Proc.* 10 (2016) 010013; DOI: [10.7566/JPSConf.10.010013](https://doi.org/10.7566/JPSConf.10.010013); Conference: C15-05-25.5 Proceedings.
6. **Studying time-like baryonic transitions with HADES**
HADES Collaboration. *Published in AIP Conf.Proc.* 1735 (2016) 080001; DOI: [10.1063/1.4949454](https://doi.org/10.1063/1.4949454); Conference: C15-09-13 Proceedings.
7. **Electromagnetic Calorimeter for the HADES Spectrometer**
HADES Collaboration. *Published in Rez, Nucl. Phys. Inst. (2015) Conference: C14-09-16.2, p.83-84 Proceedings*
8. **Reconstruction of π^0 and η mesons via photon conversion in Au+Au at 1.23 GeV/u with HADES**
HADES Collaboration. *Published in PoS Bormio2015 (2015) 033*
Conference: [C15-01-26 Proceedings](#)
9. **Search for the kaonic bound state ppK^- in $pp \rightarrow p K + \Lambda$**
FOPI-HADES Collaboration, *Published in Hyperfine Interact.* 233 (2015) 1-3, 159-166; DOI: [10.1007/s10751-015-1178-0](https://doi.org/10.1007/s10751-015-1178-0); Conference: [C14-09-15.5 Proceedings](#)
10. **Investigating hadronic resonances in pp interactions with HADES**
HADES Collaboration, *Published in EPJ Web Conf.* 97 (2015) 00024
DOI: [10.1051/epjconf/20159700024](https://doi.org/10.1051/epjconf/20159700024); Conference: [C14-11-03.3 Proceedings](#)
11. **Highlights of Resonance Measurements With HADES**
HADES Collaboration, *Published in EPJ Web Conf.* 97 (2015) 00015
DOI: [10.1051/epjconf/20159700015](https://doi.org/10.1051/epjconf/20159700015); Conference: [C14-11-03.3 Proceedings](#)
12. **V0 Reconstruction of Strange Hadrons in Au+Au Collisions at 1.23 AGeV with HADES**
HADES Collaboration, *Published in J.Phys.Conf.Ser.* 599 (2015) 1, 012030
DOI: [10.1088/1742-6596/599/1/012030](https://doi.org/10.1088/1742-6596/599/1/012030); Conference: [C14-09-22.1 Proceedings](#)
13. **Reconstruction of π^0 and η mesons via conversion method in Au+Au at 1.23 GeV/u with HADES**
HADES Collaboration, *Published in J.Phys.Conf.Ser.* 599 (2015) 1, 012029
DOI: [10.1088/1742-6596/599/1/012029](https://doi.org/10.1088/1742-6596/599/1/012029); Conference: [C14-09-22.1 Proceedings](#)
14. **Protons and light fragments in Ar+KCl at 1.76 AGeV measured with HADES**
HADES Collaboration, *Published in J.Phys.Conf.Ser.* 599 (2015) 1, 012028
DOI: [10.1088/1742-6596/599/1/012028](https://doi.org/10.1088/1742-6596/599/1/012028); Conference: [C14-09-22.1 Proceedings](#)

15. [Backtracking algorithm for lepton reconstruction with HADES](#)
 HADES Collaboration , Published in *J.Phys.Conf.Ser.* 599 (2015) 1, 012027
 DOI: [10.1088/1742-6596/599/1/012027](https://doi.org/10.1088/1742-6596/599/1/012027); Conference: [C14-09-22.1 Proceedings](#)
16. **Measurement of the quasi free $np \rightarrow np\pi^+\pi^-$ and $np \rightarrow pp\pi^-\pi^0$ reactions at 1.25 GeV With HADES**
 HADES Collaboration, *EPJ Web Conf.* 81 (2014) 02009; DOI: 10.1051/epjconf/20148102009;
 Conference: C14-05-29 Proceedings
17. **Time of flight measurement in heavy-ion collisions with the HADES RPC TOF wall HADES**
 HADES Collaboration, *JINST* 9 (2014) 11, C11015; DOI: 10.1088/1748-0221/9/11/C11015; Conference: C14-02-23.2 Proceedings
18. **Low mass dielectrons radiated off cold nuclear matter measured with HADES**
 HADES Collaboration , *EPJ Web Conf.* 66 (2014) 09011; DOI: 10.1051/epjconf/20146609011;
 Conference: C13-06-02.3 Proceedings
19. **New data on the quasi-free $np \rightarrow np\pi^+\pi^-$ and $np \rightarrow pp\pi^-\pi^0$ reactions at 1.25 GeV with HADES**
 HADES Collaboration , Published in *PoS BaldinISHEPPXXII* (2014) 120
 Conference: [C14-09-15.10 Proceedings](#)
20. **In-medium hadron properties measured with HADES**
 HADES Collaboration, *EPJ Web Conf.* 66 (2014) 04023;
 DOI: 10.1051/epjconf/20146604023; Conference: C13-06-02.3 Proceedings
21. **Proton induced dielectron radiation off Nb: Pt and Y distributions,**
 HADES Collaboration, (2013) 5 pp, Published in *J.Phys.Conf.Ser.* 426 (2013) 012034, DOI:
 10.1088/1742-6596/426/1/012034.
22. **Di-pion and di-electron production in NN reactions with HADES at 1.25GeV incident beam energy**
 HADES Collaboration, (2013). 9 pp. Published in *PoS Bormio2013* (2013) 060, Conference: C13-01-21.2
23. **Hades experiments: Investigation of hadron in-medium properties**
 HADES Collaboration. (2013) [Journal of Physics: Conference Series](#) 420 (1),
 art. no. 012013
24. **Double pion production in np and pp collisions at 1.25 GeV with HADES** HADES Collaboration,(
 2012) 7 pp., Published in *PoS Baldin-ISHEPP-XXI* (2012) 041, Conference: C12-09-10.4 Proceedings.
25. **New data on the differential cross section of the dp-elastic scattering at 2.5 GeV obtained with HADES detector**
 HADES Collaboration, (2012) 8 pp., Published in *PoS Baldin-ISHEPP-XXI* (2012) 040, Conference:
 C12-09-10.4 Proceedings
26. **The dp-elastic cross section measurement at the deuteron kinetic energy of 2.5 GeV**
 HADES Collaboration, (2012) *EPJ Web of Conferences* 3 , art. no. 09021
27. **Strange baryon resonances in pp collisions measured with HADES**
 HADES, Published in *Hyperfine Interact.* 213 (2012) 1-3, 63-70
 DOI: [10.1007/s10751-011-0388-3](https://doi.org/10.1007/s10751-011-0388-3); Conference: [C11-04-27.2 Proceedings](#)
28. **Resonance production in p+p, p+A and A+A collisions measured with HADES**
 HADES Collaboration, (2012) *EPJ Web of Conferences* 36 , art. no. 00015.

(Most of the conference proceedings can be obtained from the [SCOPUS](#) and [SPIRES databases](#))