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http://www.physics.auth.gr/system/cvs/36/original/PetridouCV_2011.pdf?1332417381
2. Ελευθεριάδης Χρήστος, Αναπληρωτής Καθηγητής του Τμήματος Φυσικής της Σ.Θ.Ε. του Α.Π.Θ.
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3. Λιόλιος Αναστάσιος, Αναπληρωτής Καθηγητής του Τμήματος Φυσικής της Σ.Θ.Ε. του Α.Π.Θ.
http://www.physics.auth.gr/system/cvs/38/original/A.LIOLIOS_cv_istoselida_greek_2013.pdf?1366277599
4. Κουρκουμέλη Χριστίνα, Καθηγήτρια του Τμήματος Φυσικής της Σ.Θ.Ε. του Ε.Κ.Π.Α.
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5. Τζαμαριάς Σπυρίδων, Καθηγητής της Σχολής Θετικών Επιστημών και Τεχνολογίας του Ελληνικού Ανοικτού Πανεπιστημίου
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http://www.inp.demokritos.gr/web2/?page_id=406&user=Fanourakis-George
7. Lolos George, Καθηγητής του Physics Department of Regina University, Canada
<http://www.uregina.ca/science/physics/faculty-staff/faculty/george-lolos.html>

ΑΝΑΠΛΗΡΩΜΑΤΙΚΑ ΜΕΛΗ

1. Κίτης Γεώργιος, Αναπληρωτής Καθηγητής του Τμήματος Φυσικής της Σ.Θ.Ε. του Α.Π.Θ.
<http://www.physics.auth.gr/system/cvs/30/original/Kitis.pdf?1277375591>
2. Μανωλοπούλου Μεταξία, Αναπληρώτρια Καθηγήτρια του Τμήματος Φυσικής της Σ.Θ.Ε. του Α.Π.Θ.
<http://www.physics.auth.gr/system/cvs/39/original/Manolopoulou.pdf?1277805184>
3. Σαββίδης Ηλίας, Αναπληρωτής Καθηγητής του Τμήματος Φυσικής της Σ.Θ.Ε. του Α.Π.Θ.
<http://www.physics.auth.gr/system/cvs/41/original/Savvidis.pdf?1277375849>
4. Γαζής Ευάγγελος, Καθηγητής της Σχολής Ε.Μ.Φ.Ε. του Ε.Μ.Π.
http://www.physics.ntua.gr/~egazis/EvangelosGazis_CV_Apr2013.pdf
5. Γκιάλας Ιωάννης, Καθηγητής του Τμήματος Μηχανικών Οικονομίας και Διοίκησης της Σχολής Επιστημών της Διοίκησης του Πανεπιστημίου Αιγαίου
<http://www.fme.aegean.gr/el/p/gkialas-ioannes>

6. Γιόκαρης Νικόλαος, Καθηγητής του Τμήματος Φυσικής της Σ.Θ.Ε. του Ε.Κ.Π.Α.
(βλέπε σελ. 11)
7. Cavasini Vincenzo, Καθηγητής του Physics Department, Pisa University, Italy
<http://unimap.unipi.it/cercapersone/dettaglio.php?ri=4390&template=dettaglio.tpl>

I. Curriculum Vitae
Spyros Eust. Tzamarias

1. Studies

- 1975 – 1979 Undergraduate studies in Physics at the Physics Department of the University of Thessaloniki.
1979 – 1981 Postgraduate Studies and Research in Archaeometry and Authenticity of Ancient Potteries at the Laboratory of Atomic and Nuclear Physics of the Aristotelian University of Thessaloniki
1981 – 1983 Postgraduate studies in Fundamental Physics at the CNR (NCSR) “Demokritos”, Research at the Physics Laboratory of the University of Athens and the European Centre for Nuclear Research CERN.
1983 – 1986 Doctoral research at FERMILAB USA (FERMI National Accelerator Laboratory - FERMILAB)

2. Academic Career

- 1979 – 1981 Postgraduate Scholarship from the Volkswagen Foundation.
1981–1986 Research Associate at the University of Athens, Guest Scientist at FERMILAB
1986–1989 Research Associate and Senior Research Scientist at the Northwestern University USA, Research Coordinator at the E705 FERMILAB experiment.
1989 – 1992 CERN Research Fellow, Research Team Convener in the DELPHI experiment of CERN. Visiting Senior Scientist at the Bologna University.
1992 – 1996 Senior Chadwick Fellow in the Physics Department of the University of Liverpool. Head of research group. Research Team Convener in the DELPHI experiment and representative of the UK DELPHI groups.
1996 - 2000 Senior Researcher at the Institute of Nuclear Physics (INP) at the NCSR DEMOKRITOS. Research group leader. Coordinator of the Laboratory for Data Acquisition-Processing and Analysis. Director of Postgraduate Studies of INP and member of the Education Board of DEMOKRITOS. Member and president of the INP Scientific Advisory Board.
2000 – Professor in the School of Science and Technology of the Hellenic Open University (HOU). Head of the Particle and Astroparticle Physics Research Group. Director of the Physics Laboratory. Academic Director of the HOU undergraduate program «Studies in Natural Sciences» . Academic Director (2005-2008) of the HOU postgraduate programs «Advanced Studies in Physics» and “Master in Teaching Natural Science” .
2000-2004 Coordinator of the DAQ and Physics analysis of the NESTOR experiment. Member of the executive board of the NESTOR collaboration.
2001-2005 Dean of the HOU Faculty of Science and Technology.
2005- Coordinator of the Hellenic Lyceum Cosmic Observatories Network. Founding member of the research/education consortium of European Universities and Research Institutes EUROCOSMICS.
2007-2009 President of the Hellenic Association for the Study of High Energy Physics, Member of the GSRT committee for CERN and the GSRT committees for neutrino Astroparticle Physics.
2005-2012 Member of the KM3NeT Strategic Project Board
2012- Visiting Professor in the Department of Physics of the Liverpool University

3. Contribution to the International Collaborative Research Effort

He has been actively involved in the research activities of major international experimental collaborations and he contributed, a) in the development of innovative instrumentation and experimental methodology, b) in the design and construction of electronic control systems for particle detectors and electronics for the selection and processing of experimental information, c) in developing methods and software for accurate simulation of detectors and physical processes, d) in developing methods of signal processing, algorithms for data selection, particle identification, object (track, vertex, shower, jet) reconstruction and methods for physics analysis. He has served as coordinator of international research teams in the above experiments. Specifically, he participated actively in large, international Particle and Astroparticle Physics experiments, namely in the R808 experiment at CERN, in the design of the Halleakala, gamma-ray telescope, in the experiments E537 and E705 and in the design of the E771 at Fermilab, in the DELPHI experiment at LEP and LEP2 of CERN. The last decade he actively participated in the Astroparticle Neutrino Physics pilot project "Nestor" and in the effort of the European Collaboration KM3NET to deploy a large neutrino telescope in the Mediterranean. He also participated in international R&D projects to design silicon detectors and to study the characteristics of silicon detectors, resistant to high radioactive doses (ATLAS Forward Tracker and ROSE) as well as in the design of large Astroparticle detectors (HELAZ - solar neutrinos, dark matter). He actively involved in R&D projects and the construction, by the Greek industry, of DAQ electronic systems for the CMS detector (CMS-TriDAS).

He has organized and supervised research teams in the institutions that he served (CERN, Univ. Of Liverpool, NCSR "Demokritos", HOU), which produced important scientific work at CERN, in the Nestor experiment and in KM3NeT. He has contributed significantly to the organization of doctoral studies in NCSR "DEMOKRITOS" and HOU by establishing institutions and processes as well as developing research infrastructure and staff. He established the Data Acquisition-Processing and Analysis Laboratory in INP DEMOKRITOS and the HOU Physics Laboratory (<http://physicslab.eap.gr>), which he directs since 2001.

4. Contribution to Particle and Astroparticle Physics

He studied in depth the production dynamics (E537, E705) of charmonium states in hadronic interactions. These studies have led to important results for understanding the basic physical mechanisms of the J/ψ production and the distribution functions of quarks and gluons in nucleons in heavy nuclei.

He studied (DELPHI) the production of (s, c and b) hadrons and the hadronization of quark and gluon jets produced in the decays of Z^0 . He has contributed with original work to QCD studies, to electroweak measurements, to the study of the production of b-quarks at LEP and their hadronization, the polarization and the decay of τ -leptons produced from the decay of Z^0 and to searches for new physics. The analysis techniques developed in these works were used in many other studies of the DELPHI collaboration. He also contributed, with innovative analysis techniques, to accurate measurements of the electroweak parameters and to the search for new physics at LEP2, e.g. he (and his DEMOKRITOS group) developed accurate techniques, for measuring the Trilinear Gauge Couplings and the mass of the W boson, which have been used by the LEP2 experiments.

He has contributed to the neutrino telescope program NESTOR, especially in the pilot operation of a test detector unit that deployed and collected data in 2003. He and his research team (HOU) have contributed significantly¹ to this proof-of-principle experiment of deep-sea neutrino telescope and particularly in hardware developments, advancing experimental methodology, signal processing and data analysis techniques and measurements

He and his HOU research group participated actively in the design study of KM3NeT. Their contribution includes a) the development of accurate simulation of processes and detector functionalities, as well as algorithms for the accurate estimation of the neutrino physical parameters through the reconstruction of the daughter muon tracks and electromagnetic showers, b) the development of observation strategies, the evaluation of the sensitivity of several detector configurations in discovering galactic and extragalactic sources and measuring diffuse neutrino fluxes, the study of construction (deployment) schemes that enhance the probability for early discoveries, c) the development of experimental methodology and the design, construction and evaluation of prototype detectors to be used for the absolute calibration of the undersea neutrino telescope, using extensive air showers, d) the conceptual design, the contribution to the construction of prototypes and the functional evaluation of digitization electronics, e) the contribution to triggering, data selection-streaming and filtering for the KM3NeT and e) the contribution to developments concerning instrumentation and methods for the detection of supernova neutrino fluxes.

5. Contribution to Education

He has taught numerous undergraduate and graduate courses at the Athens University, the University of Liverpool, in Democritus-NTUA graduate school and HOU. He has supervised many MSc-diploma and 10 doctoral theses, at CERN, the University of Liverpool, in Demokritos and HOU. He is the author of one postgraduate textbook (Statistical methods for experimental data analysis,), one undergraduate textbook (General Physics), one modern-physics laboratory guide, a series of lecture notes and postgraduate digital books for physics teachers (Quantum Mechanics, Modern Physics, Experimental Data Analysis)

In his capacity as Dean of the HOU Faculty of Science and Technology he has contributed significantly to the administrative, educational and research development of his School and the University. Examples include his contribution to establishing, equipping, financing and developing curricula and methods for the undergraduate and postgraduate laboratory training in Natural Sciences. In his capacity as Academic Director he established, organized and directed the undergraduate program "Studies in Natural Sciences" and the postgraduate programs "Advanced Studies in Physics" and "Master in Teaching Natural Science".

He established and coordinates the HELYCON (Hellenic Lyceum Cosmic Observatories Network) collaboration (HOU, Univ. of Aegean, Univ. of Cyprus, Univ. of Thessaloniki and DEMOKRITOS), utilizing large scintillation particle detector arrays (<http://www.helycon.gr>) to provide an Extensive Air Showers detection infrastructure to University and High School students, in collaboration with other similar European projects. He also contributed in the field of educational research, (http://physicslab.eap.gr/EN/Physics_Education.html). He coordinated innovative educational experiments (e.g. tele-laboratories) establishing connections between scientific research and education.

¹ As it has been recognized by the international collaboration KM3NeT (e.g. in the proposal for the Design Study for a Deep Sea Facility in the Mediterranean for Neutrino Astronomy and Associated Sciences KM3NeT)

II. Selected Publications

S. E. Tzamarias participates as a coauthor to 370 journal papers, cited more than 13500 times (~11200, excluding self-citations) corresponding to an h-index of 56. The following list comprises of representative publications where the PI had significant contribution. Achievements of the last decade in Astroparticle Physics are described in the document III and they are not included in this list. The publications are sorted according to the number of citations, which is indicated in parenthesis at the end of each entry.

- Performance of the DELPHI detector. DELPHI Collaboration , Nucl.Instrum.Meth. A378 (1996) 57 (306)
- Radiation hard silicon detectors developments by RD48 (ROSE) Collaboration , Nucl.Instrum.Meth. A466 (2001) 308-326, (236)
- Tuning and test of fragmentation models based on identified particles and precision event shape data. DELPHI Z.Phys. C73 (1996) 11-60, (196)
- Charged particle multiplicity distributions in Z0 hadronic decays. DELPHI Collaboration , Z.Phys. C50 (1991) 185-194, (141)
- Determination of Z0 resonance parameters and couplings from its hadronic and leptonic decays. DELPHI Collaboration, Nucl.Phys. B367 (1991) 511-574 (132)
- Nuclear target effects in J/ψ production in 125-GeV/c p⁻ and π⁻ interactions. S. Katsanevas et al, Phys.Rev.Lett. 60 (1988) 2121, (123)
- Production of J / Psi via psi-prime and xi decay in 300-GeV/c proton and pi⁺- nucleon interactions. E705 Collaboration, Phys.Rev.Lett. 70 (1993) 383-386, (122)
- Measurement and interpretation of the W pair cross-section in e⁺e⁻ interactions at 161-GeV. DELPHI Collaboration , Phys.Lett. B397 (1997) 158-170, (104)
- A Precise Measurement Of The Z Resonance Parameters Through Its Hadronic Decays. DELPHI Collaboration , Phys.Lett. B241 (1990) 435-448, (98)
- A Comparison of jet production rates on the Z0 resonance to perturbative QCD. DELPHI , Phys.Lett. B247 (1990) 167-176, (90)
- A Study of intermittency in hadronic Z0 decays.DELPHI , Phys.Lett. B247 (1990) 137-147, (88)
- Improved measurements of cross-sections and asymmetries at the Z0 resonance. DELPHI Collaboration, Nucl.Phys. B418 (1994) 403-427, (88)
- Production characteristics of K0 and light meson resonances in hadronic decays of the Z0. DELPHI Collaboration , Z.Phys. C65 (1995) 587-602, (84)
- Bose-Einstein correlations in the hadronic decays of the Z0. DELPHI , Phys.Lett. B286 (1992) 201-210, (84)
- Energy dependence of the differences between the quark and gluon jet fragmentation.DELPHI Collaboration, Z.Phys. C70 (1996) 179-196, (83)
- Measurement of Gamma (bb⁻) / Gamma (hadrons) using impact parameter measurements and lepton identification. DELPHI Collaboration , Z.Phys. C66 (1995) 323-340, (80)
- Measurement of the W pair cross-section and of the W mass in e⁺ e⁻ interactions at 172-GeV. DELPHI Collaboration, Eur.Phys.J. C2 (1998) 581-595, (79)
- A Measurement of J / psi and psi-prime production in 300-GeV/c proton, anti-proton and pi⁺- nucleon interactions. E705 Collaboration, Phys.Rev. D46 (1992) 4828-4835, (79)
- A Measurement of B meson production and lifetime using D lepton- events in Z0 decays. DELPHI Collaboration ,Z.Phys. C57 (1993) 181-196, (78)
- Determination of alpha(s) in second order QCD from hadronic Z decays., Z.Phys. C54 (1992) 55-74, (75)
- Production of strange particles in the hadronic decays of the Z0. DELPHI , Phys.Lett. B275 (1992) 231, (70)
- Production of charged particles, K0(s), K⁺-, p and Lambda in Z --> b anti-b events and in the decay of b hadrons. DELPHI Collaboration , Phys.Lett. B347 (1995) 447-466, (69)
- Measurement of the triple gluon vertex from four - jet events at LEP. DELPHI, Z.Phys.C59 (1993) 357, (67)
- Determination of |V(cb)| from the semileptonic decay B0 --> D*- lepton - neutrino. DELPHI Collaboration , Z.Phys. C71 (1996) 539-554, (66)
- Charged particle multiplicity distributions in restricted rapidity intervals in Z0 hadronic decays. DELPHI Collaboration , Z.Phys. C52 (1991) 271-281, (66)
- A Study of the decays of tau leptons produced on the Z resonance at LEP. DELPHI Collaboration , Z.Phys. C55 (1992) 555-568, (65)
- b tagging in DELPHI at LEP. DELPHI Collaboration Eur.Phys.J. C32 (2004) 185-208, (63)

- A Measurement of D meson production in Z0 hadronic decays. DELPHI ,Z.Phys. C59 (1993) 533-546, (63)
- ψ production and $p\bar{N}$ and $\pi\bar{N}$ interactions at 125-GeV/c and a determination of the gluon structure functions of the $p\bar{}$ and the $\pi\bar{}$., S. Tzamarias et al , Phys.Rev. D48 (1993) 5067-5080, (61)
- The Barrel Ring Imaging Cherenkov counter of DELPHI. E.G. Anassontzis et al., Nucl.Instrum.Meth. A323 (1992) 351-362, (59)
- Experimental study of the triple gluon vertex. DELPHI , Phys.Lett. B255 (1991) 466-476, (58)
- Production of Lambda and Lambda anti-Lambda correlations in the hadronic decays of the Z0. DELPHI Collaboration , Phys.Lett. B318 (1993) 249-262, (57)
- Measurements of the line shape of the Z0 and determination of electroweak parameters from its hadronic and leptonic decays. DELPHI Collaboration , Nucl.Phys. B417 (1994) 3-57, (56)
- Measurement and interpretation of fermion-pair production at LEP energies of 183-GeV and 189-GeV. DELPHI Collaboration, Phys.Lett. B485 (2000) 45-61, (54)
- Lifetime and production rate of beauty baryons from Z decays. DELPHI , Z.Phys. C68 (1995) 375-390, (54)
- Identified charged particles in quark and gluon jets. DELPHI, Eur.Phys.J. C17 (2000) 207-222, (50)
- Inclusive measurements of the K+- and p / anti-p production in hadronic Z0 decays. DELPHI Collaboration , Nucl.Phys. B444 (1995) 3-26, (49)
- Charged particle multiplicity distributions for fixed number of jets in Z0 hadronic decays. DELPHI Collaboration , Z.Phys. C56 (1992) 63-76, (49)
- π^{\pm} , K $^{\pm}$, p and anti-p production in Z0 \rightarrow q anti-q, Z0 \rightarrow b anti-b, Z0 \rightarrow u anti-u, d anti-d, s anti-s. DELPHI Collaboration , Eur.Phys.J. C5 (1998) 585-620, (48)
- Measurements of the tau polarization in Z0 decays. DELPHI , Z.Phys. C67 (1995) 183-202, (48)
- Classification of the hadronic decays of the Z0 into b and c quark pairs using a neural network. DELPHI Collaboration , Phys.Lett. B295 (1992) 383-395, (48)
- Measurement of Trilinear Gauge Couplings in e+e- Collisions at 161-GeV and 172-GeV. DELPHI Collaboration , Phys.Lett. B423 (1998) 194-206, (45)
- A Precise measurement of the partial decay width ratio $R(b) = \Gamma(b\text{ anti-b}) / \Gamma(\text{had})$. DELPHI Collaboration , Eur.Phys.J. C10 (1999) 415-442, (43)
- A Precise measurement of the B(d)0 lifetime using a new technique. DELPHI, Z.Phys. C74 (1997) 19, (42)
- Study of rare b decays with the DELPHI detector at LEP. , Z.Phys. C72 (1996) 207-220, (41)
- Measurement of the mass and width of the W boson in e+e- collisions at $\sqrt{s} = 189\text{-GeV}$. DELPHI , Phys.Lett. B511 (2001) 159-177, (40)
- First measurement of the strange quark asymmetry at the Z0 peak. DELPHI, Z.Phys. C67 (1995) 1-14, (40)
- A Precision measurement of the average lifetime of B hadrons. DELPHI, Z.Phys. C63 (1994) 3-16, (38)
- Strange baryon production in Z hadronic decays. DELPHI , Z.Phys. C67 (1995) 543-554, (37)
- Measurement of the multiplicity of gluons splitting to bottom quark pairs in hadronic Z0 decays. DELPHI , in Phys.Lett. B405 (1997) 202-214, (36)
- Measurement of the mass of the W boson using direct reconstruction at $\sqrt{s} = 183\text{-GeV}$. DELPHI , Phys.Lett. B462 (1999) 410-424, (35)
- Measurement and interpretation of fermion pair production at LEP energies from 130-GeV to 172-GeV. DELPHI , Eur.Phys.J. C11 (1999) 383-407, (35)
- Search for hidden charm resonance states decaying into J / Psi or Psi-prime plus pions. E705 Collaboration , Phys.Rev. D50 (1994) 4258-4264, (35)
- J / psi production in the hadronic decays of the Z. DELPHI ,Phys.Lett. B341 (1994) 109-122, (35)
- Measurements of the trilinear gauge boson couplings W W V (V = gamma,Z) in e+ e- collisions at 183-GeV., DELPHI , Phys.Lett. B459 (1999) 382-396, (30)
- Production of chi charmonium via 300-GeV/c pion and proton interactions on a lithium target. E705 Collaboration , Phys.Rev. D49 (1994) 543-546, (30)
- Measurement of trilinear gauge boson couplings WWV, (V = Z, gamma) in e+ e- collisions at 189-GeV. DELPHI , Phys.Lett. B502 (2001) 9-23, (28)
- Investigation of the splitting of quark and gluon jets. DELPHI , Eur.Phys.J. C4 (1998) 1-17, (23)
- A Precise measurement of the tau polarization at LEP-1. DELPHI ,Eur.Phys.J. C14 (2000) 585 (20)
- Accurate estimation of the trilinear gauge couplings using optimal observables including detector effects., G.K. Fanourakis et al, Nucl.Instrum.Meth. A414 (1998) 399-417, (15)

III. Significant research achievements in the last 10 years

The PI of the proposed project, S. E. Tzamarias, directs the Physics Laboratory of the School of Science and Technology of the Hellenic Open University (HOU) since its foundation. The Physics Laboratory supports the research activities of the HOU Particle and Astroparticle Physics group (hereafter HOU-group), which the PI established and coordinates since 2001. The Laboratory possesses expertise, instruments and infrastructure for developing particle detectors as well as digitization and data acquisition electronics. The Lab's research facilities also include state of the art instrumentation, suitable for the development of large gaseous particle detectors (including large, spherical Time Projection Chambers), specialized electronic systems and a very large computing facility (a Blade system of ~ 1500 processing cores). The PI had a crucial contribution to the growth of the Lab and the achievements of the research team, including the funding of the research facilities, the funding and training of the research and technical staff, the management and the coordination of the research effort of the HOU-group.

The HOU group joined the NESTOR collaboration in 2001 and participated to the homonymous neutrino telescope project until 2004. Their contribution² was essential to the preparation, deployment, operation and data analysis of the test detector that collected data in 2003. Their results have been presented in several conferences and are included in publications of the NESTOR Collaboration, e.g. *A measurement of the cosmic-ray muon flux with a module of the NESTOR neutrino telescope*, NESTOR Collaboration, *Astropart.Phys.* 23 (2005) 377-392, *Operation and performance of the NESTOR test detector*. NESTOR Collaboration, *Nucl.Instrum.Meth.* A552 (2005) 420-439 and *Operation and performance of the NESTOR test detector: A measurement of the atmospheric muon flux*. S.E. Tzamarias for the NESTOR Collaboration, *Nucl.Phys.Proc.Suppl.* 143 (2005) 355-358, as well as *NESTOR experiment in 2003*. NESTOR Collaboration, *Phys.Atom.Nucl.* 67 (2004) 2054-2057, *NESTOR: A deep-sea neutrino telescope*. S.E. Tzamarias for the NESTOR Collaboration *Nucl.Instrum.Meth.* A502 (2003), *Nestor first results*, A.G. Tsirigotis, *Eur.Phys.J.C33:s956 s958*, 2004, *NESTOR Deep Sea Neutrino Telescope: Deployment and results.*, NESTOR Collaboration, *Nucl.Phys.Proc.Suppl.* 151 (2006) 279-286, *Recent results from NESTOR*, NESTOR Collaboration, *Nucl.Instrum.Meth.*A567:452-456, 2006

The above achievements were essential for the approval of the KM3NeT Design Study (FP6) proposal; to which the PI contributed as a coauthor, responsible for the simulation and physics studies. The HOU group contributed significantly to the KM3NeT Design Study, as imply the KM3NeT *Conceptual* (ISBN 978-90-6488-031-5, <http://www.km3net.org/CDR/CDR-KM3NeT.pdf>) and *Technical* (ISBN 978-90-6488-033-9, <http://www.km3net.org/TDR/TDRKM3NeT.pdf>) *Design Reports* and it is presented in the following.

The HOU group developed detailed simulation tools as well as reconstruction techniques, integrated in the extended software package HOURS (HOU Reconstruction and Simulation) that is one for the three major software tools used by the KM3NeT Collaboration for the design studies. Description of the above developments has been published in journals (*Application of Kalman filter methods to event filtering and reconstruction for neutrino telescope*, A.G. Tsirigoti et al, *Nucl.Instrum.Meth.* A602 (2009) 91-94, *HOU Reconstruction & Simulation (HOURS): A complete simulation and reconstruction package for Very Large Volume underwater neutrino Telescopes*, A. G. Tsirigotis et al, *Nucl.Instrum.Meth.* A626-627 (2011)) and presented in conferences and international meetings. The HOU-group studied several telescope configurations, evaluating their potential to discover galactic and extragalactic neutrino sources. Results of the above studies are included in the KM3NeT Design Reports and published in: *Tools and methods for simulation and evaluation of very large volume Cherenkov neutrino detectors*, A.G. Tsirigotis et al, *Nucl.Instrum.Meth.* A639 (2011) 79-82 and *Using HOURS to evaluate Very Large Volume Undersea Neutrino Telescope configurations* S.E.Tzamarias et al, *Nucl.Instrum.Meth.* A626-627 (2011) 188-190, *Reconstruction efficiency and discovery potential of a Mediterranean neutrino telescope: A simulation study using the Hellenic Open University Simulation & Reconstruction (HOURS) package.*, A.G. Tsirigotis et al, arXiv:1201.5079 [astro-ph.IM], to appear in *Nucl. Instr. and Meth. A.* 2012).

The HOU group advanced calibration techniques and instrumentation, using Extensive Air Showers detected by floating detector arrays. The performance of the proposed calibration system was evaluated with laboratory tests and detailed simulation studies, demonstrating excellent resolution. It has been included in the KM3NeT Technical Design Report whilst the design, prototyping, tests and results are published in the following journal papers: *Use of floating surface detector stations for the calibration of a deep-sea neutrino*

² Hardware and data analysis developments are described in details http://physicslab.eap.gr/EN/Technical_notes.html and <http://physicslab.eap.gr/thesis/tsirigotis>

telescope. A. G. Tsirigotis et al., Nucl.Instrum.Meth. A595 (2008) 80-83, *Study of the calibration potential of HELYCON detectors with ANTARES*, J.-P. Ernenwein, et al., Nucl.Instrum.Meth. A602 (2009) 88-90, *Calibration and Optimization of a Very Large Volume Neutrino Telescope using Extensive Air Showers*, A.Leisos et al, Nucl.Instrum.Meth. A626-627 (2011) 231-233, *Synchronous Detection of Extensive Air Showers by a HELYCON Detector Array and a Deep Sea Underwater Neutrino Telescope: Statistical and Systematic Effects*, A. Leisos et al, Nucl.Instrum.Meth. A639 (2011) 83-87.

The HOU contribution to the KM3NeT design study also includes the development of digitization electronics, the evaluation of their performance and of signal processing algorithms, as described in: *Time over threshold electronics for an underwater neutrino telescope*, Bourlis G. et al, Nucl.Instrum.Meth. A602 (2009) 129-132, *Use of the Multi-Time over Threshold electronics to digitize signals from VLVnT*, G. Bourlis, et al, Nucl.Instrum.Meth. A626-627 (2011) 163-165) and presented in international workshops.

The HOU group also advanced novel, data selection and analysis techniques. It is worth mentioning that the above methods enlarge significantly the KM3NeT discovery potential for neutrino point-like and extended sources. These results have been included in KM3NeT reports, presented in several international workshops and have been accepted for publication in scientific journals (e.g. *Evaluation of the discovery potential of an underwater Mediterranean neutrino telescope taking into account the estimated directional resolution and energy of the reconstructed tracks*. A. Leisos et al arXiv:1201.5584, to appear in Nucl. Instr. and Meth. A. 2012, *A reconstruction method for neutrino induced muon tracks taking into account the a priori knowledge of the neutrino source*. A.G. Tsirigotis et al , arXiv:1201.5050, to appear in Nucl. Instr. and Meth. A. 2012)It was believed that an undersea neutrino telescope cannot observe low energy neutrinos produced by a supernova explosion, due to the high background originating from the natural radioactivity of the sea water. The HOU team advanced triggering and data analysis methods, which enable the KM3NeT to observe the explosion of a typical supernova in our galaxy. These results have been presented in international workshops and have been accepted for publication in a scientific journal (*A Feasibility Study for the Detection of Supernova Explosions with an Undersea Neutrino Telescope*. A. Leisos, et al, arXiv:1201.5726, to appear in Nucl. Instr. and Meth. A. 2012)

The PI, during the last decade, has reported results and achievements of collaborative research projects (NESTOR, KM3NeT, HELYCON) to major International Conferences as the *RICH Workshops*, *Int. Conference of Neutrino Physics and Astrophysics*, *VLVt Workshops*, *ICRC*, *ICATP* and he participated to scientific and organizing committees of the *Fourth International Workshop on Ring Imaging Cherenkov Detectors*, the *2002 CERN European School of High-Energy Physics*, the *XIII International Symposium on Very High Energy Cosmic Ray Interaction* (Editor) *VLVt2011* (editor) and of many international workshops organized by the Hellenic HEP Society. The PI or/and members of his research group have presented, their results to more than 40 recent, international conferences, (http://physicslab.eap.gr/EN/Conferences_%26_Seminars.html) contributing with more than 60 talks. An indicative collection of contributions to international conferences and workshops is listed in the following: *NESTOR Status Report* , at RICH 2002, *NESTOR First Results at EPS*, 2003, *NESTOR at Neutrino 2004*, *BAIKAL - ANTARES - NEMO - NESTOR Mediteranean km3 Neutrino Telescope* at XIII International Symposium on Very High Energy Cosmic Ray Interactions, *HELYCON: A progress Report* at the 20th ECRS 2006, *HELYCON: Towards a Sea-Top Infrastructure* IDM 2006, *A Sea-Top Infrastructure for Calibrating an Underwater Neutrino Telescope* at the TeV Particle Astrophysics 2007, Venice, *The HELYCON Extensive Air Shower Array ICATPP*, Como, 2007, *Use of floating surface detector stations for the calibration of a deep-sea neutrino telescope* at RICH 2007, *Application of Kalman filter methods to event filtering and reconstruction for Neutrino Telescopy VLVnT08*, *Time over Threshold Electronics for Neutrino Telescopy at VLVnT08*, *ECFA Report 2008*, *Time over Threshold Electronics for an Underwater Neutrino Telescope*, at IWASI 2009, *Calibration and Optimization of a Very Large Volume Deep-Sea Neutrino Telescope using Extensive Air Showers*, at VLVnT 2009, *HOU Reconstruction & Simulation (HOURS): A complete simulation and reconstruction package for Very Large Volume underwater neutrino Telescopes*, at VLVnT 2009, *Using HOURS to evaluate KM3NeT designs*, at VLVnT 2009, *Tools and Methods for simulation and evaluation of very large volume Cherenkov detectors* at RICH2010, *Calibration and Optimization techniques for a Very Large Volume Cherenkov Neutrino Detector using Extensive Air Showers* at RICH 2010, *Tools and Methods for Underwater, High Energy Neutrino Telescopy*, NEUTRINO 2010, *Discovery potential of a future very large underwater neutrino telescope in the Mediterranean Sea*", at XIV International Workshop on "Neutrino Telescopes, Venice 2011, *Evaluation of Physics Performance* at KM3NeT General Meeting, Amsterdam 2011, *Evaluation of Physics Performance IP*", at KM3NeT Workshop, Paris, France, 12-13 May 2011

IV. List of Research Projects in which the PI participated in the last 10 years

Title: Design and Construction of Data Acquisition and Triggering Systems for an LHC experiment (Σχεδιασμός και Κατασκευή Συστήματος Λήψης και Επιλογής Δεδομένων σε πείραμα στον επιταχυντή LHC), **Source:** Rehabilitation of Greek speaking scientists– Operational Programme for Research and Technology (EPET II), **Principal Investigator** S. Tzamarias , INP NCSR DEMOKRITOS, **Budget:** 91.319€, **Starting Date:** 02/1/99, **End Date:**31/12/2001

Title: Development of Data Acquisition, Processing and Triggering Systems for Detector Facilities of High Energy Particle Physics (Ανάπτυξη Συστημάτων Λήψης, Επεξεργασίας και Επιλογής Δεδομένων ανιχνευτικών Συστημάτων Σωματιδιακής Φυσικής Υψηλών Ενεργειών), ΜΙΚ03, **Source:** Operational Programme for Research and Technology (EPET II), **Principal Investigator** S. Tzamarias , INP NCSR DEMOKRITOS, **Budget:** 353.000€, **Starting Date:** 1/9/99, **End Date:**30/04/2001

Title: Development of a System for the Study of Radiation-Hard Detector Systems, Sensors and Materials (Ανάπτυξη Συστήματος Μελέτης Ανθεκτικών Ανιχνευτικών Συστημάτων, Αισθητήρων και Υλικών σε Ραδιενεργό Περιβάλλον), ΜΙΚ07, **Source:** Operational Programme for Research and Technology (EPET II), **Principal Investigator** G. Fanourakis - **Deputy Principal Investigator** S. Tzamarias , INP NCSR DEMOKRITOS, **Budget:** 234.000 €, **Starting Date:** 1/9/99, **End Date:**30/04/2001

Title: Laboratory Infrastructure, HOU 2004 (Συμπληρωματικός Εξοπλισμός Εργαστηρίων Φυσικών Επιστημών), **Source:** Operational Programme ΕΠΕΑΕΚ, - **Principal Investigator** S. Tzamarias , Hellenic Open University, **Budget:** 733.675,00 €, **Starting Date:** 29/7/2005, **End Date:**31/12/2007

Title: Support of Research Teams of the Hellenic Open University (Ενίσχυση Ερευνητικών Ομάδων του Ελληνικού Ανοικτού Πανεπιστημίου), **Source:** Operational Programme ΕΠΕΑΕΚ-II - ΠΥΘΑΓΟΡΑΣ, - HOU Coordinator D. Zevgolis, **Scientific Coordinator of the Project:** Evaluation of architectures and deployment sites for a large (km³) Mediterranean Neutrino Telescope (Αξιολόγηση αρχιτεκτονικών και υποθαλάσσιων περιοχών εγκατάστασης για ένα μεγάλο (km³) Μεσογειακό Τηλεσκόπιο Νετρίνων) S. Tzamarias , Hellenic Open University, **Budget:** 49.169,65 €, **Starting Date:** 1/1/2005, **End Date:**31/12/2006

Title: DESIGN STUDY FOR A DEEP SEA FACILITY IN THE MEDITERRANEAN FOR THE NEUTRINO ASTRONOMY AND ASSOCIATED STUDIES - KM3, Hellenic Open University, **Source:** 6th Framework Program – Design Studies, **Principal Investigator** U. Katz, **Hellenic Open University Representative** S. Tzamarias, **Budget:** 242.400 €, **Starting Date:** 1/2/2006, **End Date:**31/10/2009

Title: DESIGN STUDY FOR A DEEP SEA FACILITY IN THE MEDITERRANEAN FOR THE NEUTRINO ASTRONOMY AND ASSOCIATED STUDIES - KM3, Hellenic Open University, **Source:** GSRT Matching Funds, **Hellenic Open University Representative** S. Tzamarias, **Budget:** 48.434 €, **Starting Date:** 1/2/2006, **End Date:**31/10/2009

Title: PREPARATORY PHASE FOR A DEEP SEA FACILITY IN THE MEDITERRANEAN FOR NEUTRINO ASTRONOMY AND ASSOCIATED STUDIES - KM3NeT-PP, Hellenic Open University, **Source:** 6th Framework Program – Design Studies, **Principal Investigator** E. Migneco, **Hellenic Open University Representative** S. Tzamarias, **Budget:** 48.434 €, **Starting Date:** 1/3/2008, **End Date:**29/2/2012

Title: Μελέτη πολυλεπτονικών τελικών καταστάσεων στο πλαίσιο του Καθιερωμένου Προτύπου, ως διαδικασιών παραγωγής υποβάθρου, στην αναζήτηση Νέας Φυσικής με το πείραμα ATLAS, με χρήση των πρώτων δεδομένων του LHC (Study of multi-lepton final states, in the framework of the Standard Model, as background processes in searching for New Physics with the ATLAS experiment at LHC), Physics Laboratory of the Hellenic Open University, **Source:** OPERATIONAL PROGRAMME EDUCATION AND LIFELONG LEARNING, NSRF 2007-2013, CO-FINANCED BY GREECE AND E.U – ΗΡΑΚΛΕΙΤΟΣ II, HOU-Coordinator V. Chatzinihita, **Physics Coordinator** S. Tzamarias, **Budget:** 45.000 € (total budget for the HOU 147.000€) , **Starting Date:** 1/9/2010, **End Date:**31/8/2013

Title: ASTRONEU. Development and Applications of Novel Instrumentation and Experimental Methods in Astroparticle Physics, , **Source:** (NATIONAL SUPPORT RESEARCH FRAMEWORK EKT ΘΑΛΗΣ) **Principal Investigator** S. Tzamarias, **Hellenic Open University Coordinator** S. Tzamarias, Hellenic Open University **Budget:** 600.000 €, **Starting Date:** 1/12/2011, **End Date:**31/11/2013

Title: *DIBOSON*. Searches for New Physics at Tevatron, LHC and beyond, **Source:** (NATIONAL SUPPORT RESEARCH FRAMEWORK EKT ΘΑΛΗΣ) **Principal Investigator** Ch. Petridou, AUTH **Hellenic Open University Coordinator** S. Tzamarias, **Budget:** 600.000 €, **Starting Date:** 1/12/2011, **End Date:**31/11/2013

Title: Ανάπτυξη Τηλε-Εργαστηρίων Φυσικής, **Source:** OPERATIONAL PROGRAMME EDUCATION AND LIFELONG LEARNING, NSRF 2007-2013, CO-FINANCED BY GREECE AND E.U –HOU) **Principal Investigator** Ch. Kokosis, HOU President **Physics Lab Scientific Coordinator** S. Tzamarias, **Budget:** 200.000 €, **Starting Date:** 3/1/2012, **End Date:**31/12/2013

Title: «Προμήθεια εξοπλισμού για το Ελληνικό Ανοικτό Πανεπιστήμιο, προκειμένου να αντιμετωπιστούν οι ανάγκες λειτουργίας εργαστηρίων και δομών έρευνας και καινοτομίας», (Installation of research infrastructure in order to support research laboratories and structures of innovation) **Source:** (NATIONAL SUPPORT RESEARCH FRAMEWORK ΕΣΠΑ Western Greece) **Principal Investigator** Ch. Kokosis (HOU President), HOU, **Responsible for the Physics Laboratory** S. Tzamarias (Lab Director), **Total Budget:** 3.923.765,00 €, (Budget for the Physics Laboratory: 2.231.605,00 €) **Starting Date:** 28/5/2012, **End Date:** 2013

Πίνακας επιλεγμένων βιογραφικών στοιχείων

Όνομα	Νικόλαος Δ. Γιόκαρης
Θέση στο Ίδρυμα	Καθηγητής/Τμήμα Φυσικής/Πανεπιστήμιο Αθηνών
Ερευνητικό αντικείμενο	Πειραματική Φυσική Στοιχειωδών Σωματιδίων
Σύνολο δημοσιεύσεων (αριθμός)	800
Σύνολο αναφορών (αριθμός)	53100
Πέντε τίτλοι δημοσιεύσεων στο γνωστικό αντικείμενο της θέσης	<ol style="list-style-type: none"> 1. <u>Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC</u> ATLAS Collaboration (Georges Aad (Freiburg U.) et al.). Jul 2012. 24 pp. Published in Phys.Lett. B716 (2012) 1-29 2. <u>The ATLAS Experiment at the CERN Large Hadron Collider</u> ATLAS Collaboration (G. Aad (Marseille, CPPM) et al.). 2008. 437 pp. Published in JINST 3 (2008) S08003 3. <u>Observation of B0(s) - anti-B0(s) Oscillations</u> CDF Collaboration (A. Abulencia (Illinois U., Urbana) et al.). Sep 2006. 9 pp. Published in Phys.Rev.Lett. 97 (2006) 242003 4. <u>Observation of top quark production in p⁻ p collisions</u> CDF Collaboration (F. Abe (KEK, Tsukuba) et al.). Mar 1995. 18 pp. Published in Phys.Rev.Lett. 74 (1995) 2626-2631 5. The CDF Detector: An Overview CDF Collaboration (F. Abe et al.). Feb 1988. 40 pp. Published in Nucl.Instrum.Meth. A271 (1988) 387-403