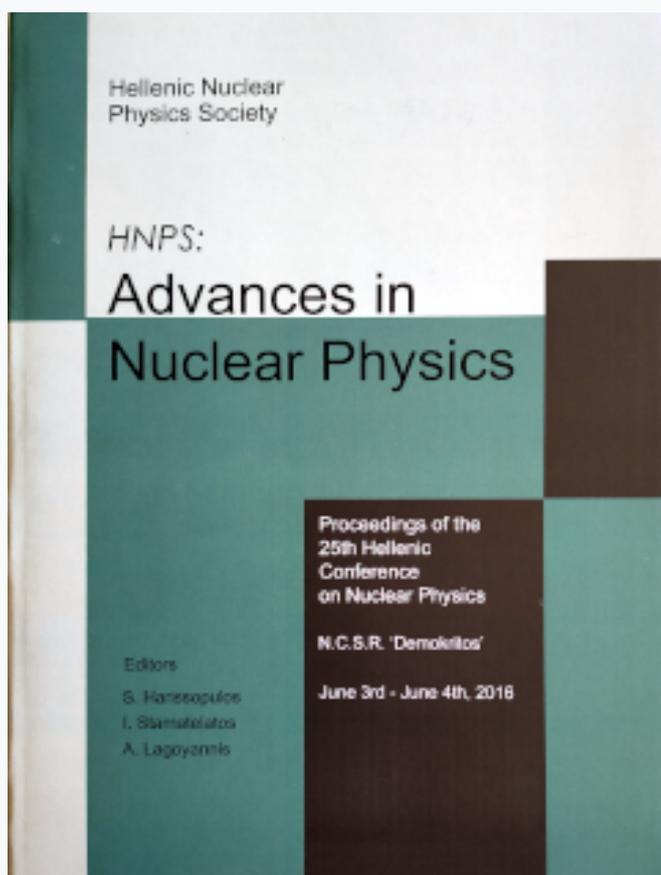


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**HELLENIC NUCLEAR PHYSICS SOCIETY**

**PROCEEDINGS**

**25<sup>th</sup> HELLENIC CONFERENCE**

**ON**

**NUCLEAR PHYSICS**



**NATIONAL CENTRE FOR SCIENTIFIC RESEARCH  
“DEMOKRITOS”**

**3 & 4 JUNE 2016**

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- G. PROVATAS

# PREFACE

The present volume contains the Proceedings of the 25<sup>th</sup> Hellenic Conference on Nuclear Physics, held in the National Centre for Scientific Research “Demokritos”, on June 3 2016. The texts of the talks and posters are compiled as submitted by the authors. This conference followed a series of Hellenic Nuclear Physics Conferences that started in 1990 at Thessaloniki and since then, they are yearly held at different Greek academic institutions. The aim of this series of conferences is to offer the local nuclear physics community the opportunity to present and discuss their latest activities in theoretical and experimental nuclear physics and applications, sometimes in collaboration with colleagues from abroad and with the usage of facilities in Greece and abroad. It is also a unique forum for presentations by young colleagues, in the early stages of their careers.

The conference was organized under the auspices of the National Centre for Scientific Research “Demokritos”. The financial support offered by the Institutes of Nuclear and Particle Physics and Nuclear and Radiological Sciences, Technology, Energy and Safety, as well as ANTISEL S.A. is gratefully acknowledged. Moreover, the encouragement and assistance provided by the Hellenic Nuclear Physics Society Governing Board for the success of the Conference and the publication of the proceedings is also gratefully acknowledged. Finally, the assistance by several graduate and undergraduate students is also warmly appreciated.

Athens 2016

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# TABLE OF CONTENTS

<b>Theo Zouros</b> Atomic Physics with Accelerators: Projectile Electron Spectroscopy of highly charged ions at the 5.5MV Demokritos Tandem accelerator	1
<b>Maria Zamani</b> Triple fission events at high energies	16
<b>Charalambos Moustakidis</b> Speed of Sound Effects on the Upper Bound of Neutron Star Mass	22
<b>George Koutelieris</b> Gas System for the ATLAS NSW Micromegas Detectors: Design Aspects and Advanced Validation Methods for their QA/QC	23
<b>Nikolas Patronis</b> Study of the $^{193}\text{Ir}(n,2n)^{192}\text{Ir}$ Reaction Cross Section	29
<b>Panagiotis Gastis</b> Nuclear reaction studies for the vp-process	35
<b>Anastasios Lagogiannis</b> Benchmarking cross sections for PIGE: The Fluorine case	36
<b>Aggeliki Assimakopoulou</b> Systematic Study of proton-induced spallation reactions with the Constrained Molecular Dynamics (CoMD) Model	42
<b>George Apostolopoulos</b> Interactions between carbon impurities and defects produced by proton irradiation in $\alpha$ -iron	47
<b>Anastasia Savidou</b> Activities and prospects of the radioactive materials management laboratory at NCSR "Demokritos"	53
<b>Theodora Vasilopoulou</b> Preparation of activation experiments for ITER material characterization and data validation in the Deuterium-Tritium JET campaign	59
<b>Nick Gazis</b> Engineering Design Integration & Non-Destructive Testing for the ESS accelerator	65
<b>Eleni Adamidi</b> The EDUSAFE project	72
<b>Kornilios Routsonis</b> Experimental study of the flux trap effect in a sub-critical assembly	79
<b>Basile Spyropoulos</b> Radiotherapy (RT) innovative Technology combined with Hospital/Home-Care Standards and Medical Protocols & Guidelines: A collective Compendium	85
<b>Alexandros Clouvas</b> Periodicity analysis of long period gamma radiation measurements in Thessaloniki, Northern Greece	91
<b>John Kalef-Ezra</b> Limitations in the assessment of radon dose: the role of direct activity measurements	92
<b>Alexandra Ioannidou</b> Activity size distribution of radioactive nuclide $^7\text{Be}$ at different locations and under different meteorological conditions	97
<b>Eleftheria Ioannidou</b> Time lag between the tropopause height and the levels of $^7\text{Be}$ concentrations in surface air	102
<b>Marilia Savva</b> Determination of $^7\text{Be}$ , $^{210}\text{Pb}$ and $^{22}\text{Na}$ Activity in Air and Rainwater samples by Gamma-ray Spectrometry	108
<b>Ekaterinini Dalaka</b> Temporal variations of $^7\text{Be}$ and its AMAD over "Demokritos" GAW station"	116
<b>Roza Vlastou</b> Investigation of $(n,xn)$ reactions using the high energy neutron facility at NCSR "Demokritos"	117
<b>Eleni Vagena</b> Measurement of the average cross section for $^{162}\text{Er}(g, n)$ reaction with bremsstrahlung photons; comparison with theoretical calculations using the TALYS model	123
<b>Veatriki Michalopoulou-Petropoulou</b> A simple angle integration method for the determination of capture reaction cross sections	129

<b>Varvara Lagaki</b>	
Installation of Neoptolemos, the new sum spectrometer for cross section measurements of capture reactions at the Tandem Accelerator Laboratory of NCSR “Demokritos”.	134
<b>Athanasios Stamatopoulos</b>	
The $^{240}\text{Pu}(n,f)$ cross section measurement at the new experimental area at CERN's n_TOF facility	139
<b>Antigoni Kalamara</b>	
$^{197}\text{Au}(n,xn)$ reactions at TSL high energy neutron facility at Uppsala	145
<b>Dimitrios Papoulias</b>	
Probing electromagnetic neutrino properties from neutrino-nucleus scattering	152
<b>Marianthi Fragopoulou</b>	
Space radiation dosimetry	153
<b>Konstantinos Preketes-Sigalas</b>	
Development of a simulation code for material analysis using the PIGE technique	162
<b>Ioannis Tzifas</b>	
Application of Synchrotrons radiation and fission track techniques to the characterization of U-bearing organic rich limestones of NW Greece.	167
<b>Ahmed Khaliel</b>	
Experimental investigations of radiative proton-capture reactions relevant to explosive nucleosynthesis	168
<b>Vasiliki Angelopoulou</b>	
Resurrected from the dead: Full characterization of an old HPGe detector using $\gamma$ -ray and CT tomographies coupled to standard calibration techniques and simulations	174
<b>Ioanna Sfampa</b>	
Correlation between isothermal TL and IRSL in K-feldspars of various Types	182
<b>Christos Tsabaris</b>	
$\gamma$ -ray spectrometry practices in the deep ocean	183
<b>Froso Androulakaki</b>	
Utilization of the Monte Carlo code FLUKA for Applications in the Marine Environment	184
<b>Filothei Pappa</b>	
Comparison of MCNP and ERICA codes in two different marine areas	185
<b>Georgia Mavrokefalou</b>	
Remote radiological assessment in the marine environment: A pilot study based on $^{137}\text{Cs}$ measurements and satellite observations in the Aegean Sea.	191
<b>Georgios Kuburas</b>	
A survey on the radioactivity of mineral springs in Greece	198
<b>Konstantia Valasi</b>	
An autonomous underwater telescope for measuring the scattering of light in the deep sea	199
<b>Kostantinos Eleftheriadis</b>	
Long term measurements of radioactive tracers over “Demokritos GAW station”	205
<b>Georgia Travidou</b>	
The Use of Nuclear Methods and Techniques in Radioecology: Teaching Approaches in the Secondary Education	206
<b>Athanasios Papageorgiou</b>	
Rare Isotope Production in peripheral heavy-ion collisions in the energy range 15-25 MeV/nucleon	207
<b>Nick Gazis</b>	
Engineering, Design Integration and the Integration Test Standard in the Engineering Resources Group	216
<b>Iason Mitsios</b>	
Investigation of natural and anthropogenic radionuclides particle-size dependence in surface soils	217
<b>Maria Sotiropoulou</b>	
Radiological impact assessment in the terrestrial environment of Greece using innovative tools - Adaptation of ERICA Tool to actual measurements	222
<b>John Kalef-Ezra</b>	
Design and operation of a therapeutic unit with unsealed radioactive sources	226
<b>Heleny Florou</b>	
The evolution of $^{137}\text{Cs}$ in the Greek marine environment and dose rate assessment in fish representing the three discrete exposure spaces	230

<b>Sofia Kolovi</b>	
Assessment of the efficiency of iron stain removal treatment in textiles by X-ray fluorescence: Preliminary results	231
<b>Kostoula Triantou</b>	
Positron Annihilation Lifetime Spectroscopy in the Study of Defects in Materials	235
<b>M. Alexandropoulou K. Ioannides</b>	
Validation of the ImageJ package for alpha track counting on Solid State Nuclear Track Detectors	239
<b>Ioannis Madesis</b>	
Evaluation of $1s2l2l'$ 4P/2P, 2P+/2P- and 2D/2P ratios from collisions of mixed state (1s2, 1s2s 3S) He-like ion beams with H2 and He targets	243
<b>Stefania Dede</b>	
Benchmarking the natSi(p,p0) and natO(d,d0) elastic scattering and the $^{16}\text{O}(d,p0,1,\alpha0)$ reactions for IBA purposes	244
<b>Anastasios Kanellakopoulos</b>	
Neutron-induced fission cross-section measurement of $^{234}\text{U}$ with monoenergetic beams in the keV and MeV range using Micromegas detectors	250
<b>Sofia Papadimitriou</b>	
Microscopic description of neutron-induced fission with the Constrained Molecular Dynamics (CoMD) Model: Preliminary Results	255
<b>Kalliopi Tsampa and E-M Lykiardopoulou</b>	
Construction and Ion-Beam Characterization of Nuclear Targets	258
<b>Dimitrios Papaioannou</b>	
Exploring the feasibility of magnetic moment measurements in the exotic $^{20}\text{C}$ nucleus using LISE++ calculations	262
<b>Angelos Laoutaris</b>	
Installation of a gas terminal stripper and a gas/foil post stripper system at the 5.5 MV Demokritos Tandem Van de Graaff accelerator	266
<b>Argyrios Papadopoulos</b>	
Assessment of gamma radiation exposure and distribution of natural radioactivity in beach sands close to plutonic rocks of Greece	271
<b>Eleni Ntemou</b>	
Measurement of differential cross sections of natLi(d, d0) for EBS purposes	272
<b>Pavlos Tsavalas</b>	
Investigation of the ITER-like wall divertor Tiles at JET tokamak	276
<b>Georgios Eleftheriou</b>	
Towards the development of a radiological box model for Aegean Sea: considerations and perspectives	280
<b>Conference Program</b>	281

# 25<sup>TH</sup> ANNUAL SYMPOSIUM OF THE HELLENIC NUCLEAR PHYSICS SOCIETY

## SCIENTIFIC PROGRAM

**Friday June 3rd, 2016**

08:30 – 09:00 Registration  
09:00 – 09:10 Welcome Addresses

<b>Time</b>	<b>Speaker</b>	<b>Affiliation</b>	<b>Title</b>
09:10 – 09:40	<b>Theo Zouros</b> (Invited Speaker)	UoC	Atomic Physics with Accelerators: Projectile Electron Spectroscopy of highly charged ions at the 5.5MV Demokritos Tandem accelerator
<b>SESSION 1:</b>	<b>Chair: Michael Kokkoris</b>	NTUA	
09:40 – 09:55	<b>Maria Zamani</b>	AUTH	Triple fission events at high energies
09:55 – 10:10	<b>Charalambos Moustakidis</b>	AUTH	Speed of Sound Effects on the Upper Bound of Neutron Star Mass
10:10 – 10:25	<b>George Koutelieris</b>	NTUA	Gas System for the ATLAS NSW Micromegas Detectors: Design Aspects and Advanced Validation Methods for their QA/QC
10:25 – 10:40	<b>Nikolas Patronis</b>	UoI	Study of the $^{193}\text{Ir}(n,2n)^{192}\text{Ir}$ Reaction Cross Section
10:40 – 10:55	<b>Panagiotis Gastis</b>	Centr.Mich.	Nuclear reaction studies for the vp-process
10:55 – 11:10	<b>Anastasios Lagogiannis</b>	NCSR D	Benchmarking cross sections for PIGE: The Fluorine case
11:10 – 11:25	<b>Aggeliki Assimakopoulou</b>	UoA	Systematic Study of proton-induced spallation reactions with the Constrained Molecular Dynamics (CoMD) Model
11:25 – 12:00	COFFEE BREAK		
<b>SESSION 2:</b>	<b>Chair: Xenofon Aslanoglou</b>	UoI	
12:00 – 12:15	<b>George Apostolopoulos</b>	NCSR D	Interactions between carbon impurities and defects produced by proton irradiation in $\alpha$ -iron
12:15 – 12:30	<b>Anastasia Savidou</b>	NCSR D	Activities and prospects of the radioactive materials management laboratory at NCSR "Demokritos"
12:30 – 12:45	<b>Theodora Vasilopoulou</b>	NCSR D	Preparation of activation experiments for ITER material characterization and data validation in the Deuterium- Tritium JET campaign
12:45 – 13:00	<b>Nick Gazis</b>	ESS	Engineering Design Integration & Non-Destructive Testing for the ESS accelerator
13:00 – 13:15	<b>Eleni Adamidi</b>	NTUA	The EDUSAFE project
13:15 – 13:30	<b>Kornilios Routsonis</b>	KTH/AUTH	Experimental study of the flux trap effect in a sub-critical assembly
13:30 – 13:45	<b>Basile Spyropoulos</b>	TEI Athens	Radiotherapy (RT) innovative Technology combined with Hospital/Home-Care Standards and Medical Protocols & Guidelines: A collective Compendium
13:45 – 14:45	LUNCH BREAK		

<b>14:45 - 15:30</b>	<b>Convener:: I. E. Stamatelatos</b>	<b>NCSR</b>	<b>POSTER SESSION</b>
<b>SESSION 3:</b>	<b>Chair: Christos Tsabaris</b>	<b>HCMR</b>	
15:30 – 15:45	<b>Alexandros Clouvas</b>	AUTH	Periodicity analysis of long period gamma radiation measurements in Thessaloniki, Northern Greece
15:45 – 16:00	<b>John Kalef-Ezra</b>	UoI	Limitations in the assessment of radon dose: the role of direct activity measurements
16:00 – 16:15	<b>Alexandra Ioannidou</b>	AUTH	Activity size distribution of radioactive nuclide <sup>7</sup> Be at different locations and under different meteorological conditions
16:15 – 16:30	<b>Eleftheria Ioannidou</b>	AUTH	Time lag between the tropopause height and the levels of <sup>7</sup> Be concentrations in surface air
16:30 – 16:45	<b>Marilia Savva</b>	NTUA	Determination of <sup>7</sup> Be, <sup>210</sup> Pb and <sup>22</sup> Na Activity in Air and Rainwater samples by Gamma-ray Spectrometry
16:45 – 17:00	<b>Ekaterinini Dalaka</b>	NCSR	Temporal variations of <sup>7</sup> Be and its AMAD over “Demokritos” GAW station”
17:00 - 17:30	COFFEE BREAK		
17:30 - 19:00	<b>HNPS General Assembly &amp; Elections</b>		
20:30	<b>SYMPOSIUM DINNER</b>		

#### Saturday June 4<sup>th</sup> 2016

<b>SESSION 4:</b>	<b>Chair: George Souliotis</b>	<b>UoA</b>	
09:00 – 09:15	<b>Roza Vlastou</b>	NTUA	Investigation of (n,xn) reactions using the high energy neutron facility at NCSR "Demokritos"
09:15 – 09:30	<b>Eleni Vagena</b>	AUTH	Measurement of the average cross section for <sup>162</sup> Er(g, n) reaction with bremsstrahlung photons; comparison with theoretical calculations using the TALYS model
09:30 – 09:45	<b>Veatriki Michalopoulou-Petropoulou</b>	NCSR	A simple angle integration method for the determination of capture reaction cross sections
09:45 – 10:00	<b>Varvara Lagaki</b>	NCSR	Installation of Neoptolemos, the new sum spectrometer for cross section measurements of capture reactions at the Tandem Accelerator Laboratory of NCSR “Demokritos”.
10:00 – 10:15	<b>Athanasios Stamatopoulos</b>	NTUA-CERN	The <sup>240</sup> Pu(n,f) cross section measurement at the new experimental area at CERN's n_TOF facility
10:15 – 10:30	<b>Antigoni Kalamara</b>	NTUA	<sup>197</sup> Au(n,xn) reactions at TSL high energy neutron facility at Uppsala
10:30 – 10:45	<b>Dimitrios Papoulias</b>	UoI	Probing electromagnetic neutrino properties from neutrino-nucleus scattering
10:45 – 11:15	COFFEE BREAK		

<b>SESSION 5:</b>	<b>Chair: Maria Zamani</b>	<b>AUTH</b>	
11:15 – 11:30	<b>Marianthi Fragopoulou</b>	AUTH	Space radiation dosimetry
11:30 – 11:45	<b>Konstantinos Preketes-Sigalas</b>	NCSR	Development of a simulation code for material analysis using the PIGE technique
11:45 – 12:00	<b>Ioannis Tzifas</b>	AUTH	Application of Synchrotrons radiation and fission track techniques to the characterization of U-bearing organic rich limestones of NW Greece.
12:00 – 12:15	<b>Ahmed Khaliel</b>	UoA	Experimental investigations of radiative proton-capture reactions relevant to explosive nucleosynthesis
12:15 – 12:30	<b>Vasiliki Angelopoulou</b>	UoA	Resurrected from the dead: Full characterization of an old HPGe detector using $\gamma$ -ray and CT tomographies coupled to standard calibration techniques and simulations
12:30 – 12:45	<b>Ioanna Sfampa</b>	AUTH	Correlation between isothermal TL and IRSL in K-feldspars of various Types
12:45 – 14:00	LUNCH BREAK		
<b>SESSION 6:</b>	<b>Chair: Heleny Florou</b>	<b>NCSR</b>	
14:00 – 14:15	<b>Christos Tsabaris</b>	HCMR	$\gamma$ -ray spectrometry practices in the deep ocean
14:15 – 14:30	<b>Froso Androulakaki</b>	HCMR	Utilization of the Monte Carlo code FLUKA for Applications in the Marine Environment
14:30 – 14:45	<b>Filothei Pappa</b>	HCMR	Comparison of MCNP and ERICA codes in two different marine areas
14:45 – 15:00	<b>Georgia Mavrokefalou</b>	NCSR	Remote radiological assessment in the marine environment: A pilot study based on Cs-137 measurements and satellite observations in the Aegean Sea.
15:00 – 15:15	<b>Georgios Kuburas</b>	NCSR	A survey on the radioactivity of mineral springs in Greece
15:15 - 15:30	<b>Konstantia Valasi</b>	NCSR	An autonomous underwater telescope for measuring the scattering of light in the deep sea
15:30 - 15:45	<b>Kostantinos Eleftheriadis</b>	NCSR	Long term measurements of radioactive tracers over “Demokritos GAW station”
<b>SYMPOSIUM CLOSING</b>			

## POSTER SESSION

Poster	First Author	Affiliation	Title
P1	Georgia Travidou	NCSR	The Use of Nuclear Methods and Techniques in Radioecology: Teaching Approaches in the Secondary Education
P2	Athanasios Papageorgiou	UoA	Rare Isotope Production in peripheral heavy-ion collisions in the energy range 15-25 MeV/nucleon
P3	Nick Gazis	ESS	Engineering, Design Integration and the Integration Test Standard in the Engineering Resources Group
P4	Iason Mitsios	NTUA	Investigation of natural and anthropogenic radionuclides particle-size dependence in surface soils
P5	Maria Sotiropoulou	NCSR	Radiological impact assessment in the terrestrial environment of Greece using innovative tools - Adaptation of ERICA Tool to actual measurements
P6	John Kalef-Ezra	UoI	Design and operation of a therapeutic unit with unsealed radioactive sources
P7	Heleny Florou	NCSR	The evolution of $^{137}\text{Cs}$ in the Greek marine environment and dose rate assessment in fish representing the three discrete exposure spaces
P8	Sofia Kolovi	NCSR	Assessment of the efficiency of iron stain removal treatment in textiles by X-ray fluorescence: Preliminary results
P9	Kostoula Triantou	NCSR	Positron Annihilation Lifetime Spectroscopy in the Study of Defects in Materials
P10	M. Alexandropoulou	UoI	Validation of the ImageJ package for alpha track counting on Solid State Nuclear Track Detectors
P11	K. Ioannides	UoCrete	Evaluation of $1s2l2l'$ $4P/2P$ , $2P^+/2P^-$ and $2D/2P$ ratios from collisions of mixed state ( $1s2$ , $1s2s$ $3S$ ) He-like ion beams with $\text{H}_2$ and He targets
P12	Stefania Dede	NTUA	Benchmarking the $\text{natSi}(p,p0)$ and $\text{natO}(d,d0)$ elastic scattering and the $^{16}\text{O}(d,p0,1,\alpha0)$ reactions for IBA purposes
P13	Anastasios Kanellakopoulos	NTUA	Neutron-induced fission cross-section measurement of $^{234}\text{U}$ with monoenergetic beams in the keV and MeV range using Micromegas detectors
P14	Sofia Papadimitriou	UoA	Microscopic description of neutron-induced fission with the Constrained Molecular Dynamics (CoMD) Model: Preliminary Results
P15	Kalliopi Tsampa/ E-M Lykiardopoulou	UoA	Construction and Ion-Beam Characterization of Nuclear Targets
P16	Dimitrios Papaioannou	UoA	Exploring the feasibility of magnetic moment measurements in the exotic $^{20}\text{C}$ nucleus using LISE++ calculations
P17	Angelos Laoutaris	NTUA	Installation of a gas terminal stripper and a gas/foil post stripper system at the 5.5 MV Demokritos Tandem Van de Graaff accelerator
P18	Argyrios Papadopoulos	AUTH	Assessment of gamma radiation exposure and distribution of natural radioactivity in beach sands close to plutonic rocks of Greece
P19	Eleni Ntemou	NTUA	Measurement of differential cross sections of $\text{natLi}(d, d0)$ for EBS purposes
P20	Pavlos Tsavalas	NCSR	Investigation of the ITER-like wall divertor Tiles at JET tokamak
P21	Georgios Eleftheriou	NRPA	Towards the development of a radiological box model for Aegean Sea: considerations and perspectives