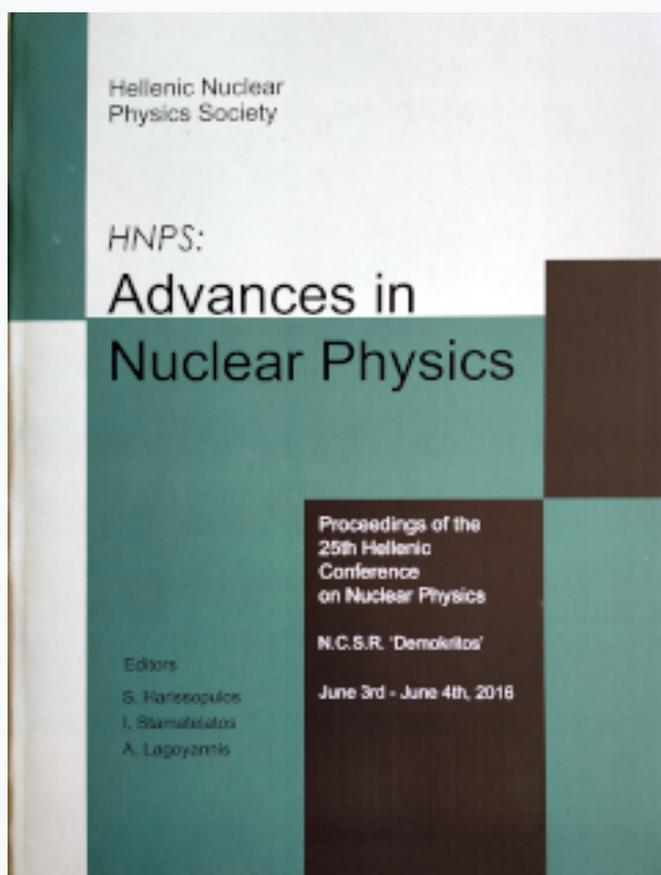


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HELLENIC NUCLEAR PHYSICS SOCIETY

PROCEEDINGS

25th HELLENIC CONFERENCE

ON

NUCLEAR PHYSICS



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

3 & 4 JUNE 2016

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PREFACE

The present volume contains the Proceedings of the 25th 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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25TH 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

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

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

Saturday June 4th 2016

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

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

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}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 $1s2121' 4P/2P$, $2P+/2P-$ and $2D/2P$ ratios from collisions of mixed state ($1s2$, $1s2s 3S$) He-like ion beams with 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}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}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