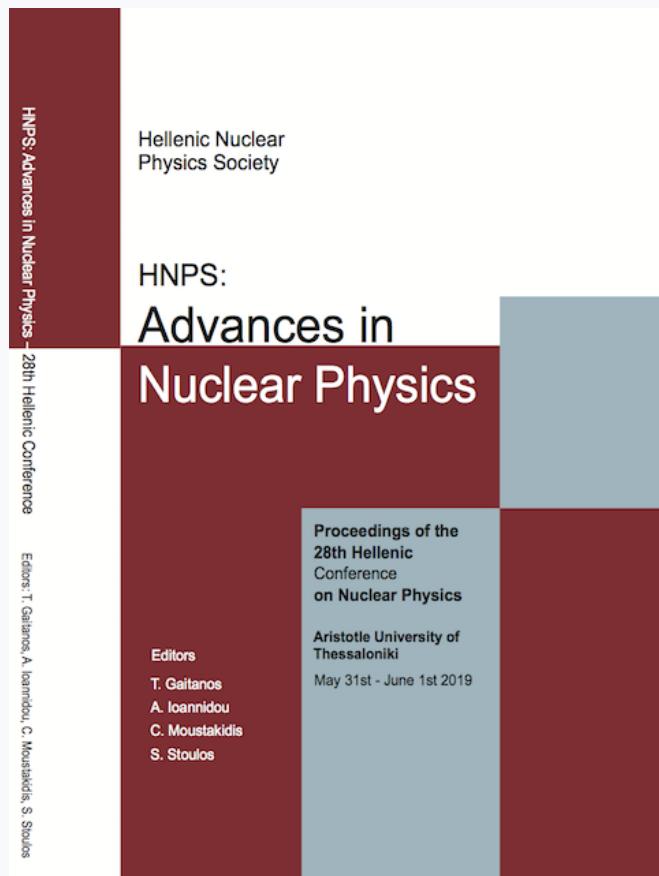


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Preface

and Symposium info Editorial comments

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HELLENIC NUCLEAR PHYSICS & APPLICATIONS SOCIETY

PROCEEDINGS

**28th ANNUAL SYMPOSIUM
AUTH, Thessaloniki 31st May – 1st June 2019**

28th Annual Symposium Hellenic Nuclear Physics Society

31 May - 1 June 2019

Physics Department, Aristotle University of Thessaloniki

HNPS2019

Nuclear Structure

Nuclear Reactions

Accelerator Physics & Instrumentation

Nuclear Astrophysics

Nuclear Physics Applications



Sponsored by AUTH
Research Committee

Organized by
Hellenic Nuclear Physics Society

Organizing Committee:

T. Gaitanos

A. Ioannidou

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PREFACE

This volume contains the Proceedings of the 28th Symposium of the Hellenic Nuclear Physics & Applications Society, held in Aristotle University of Thessaloniki on the 31st May - 1st June 2019 (HNPS2019). The texts of the talks and poster presentations are compiled as submitted by the authors.

This symposium followed a series that started in 1990 and since then is yearly held at different Greek Academic Institutions involving Nuclear Physics. The aim of this series of symposiums is to offer the opportunity to present and discuss the latest activities of the Greek nuclear physics community in theoretical and experimental nuclear physics including applications. It is also a unique forum for the young scientists to present their work in the early stage of their career.

During the symposium, Prof. Roza Vlastou (NTUA) was honored by the board of the HNPAS for supporting the Nuclear Science in Greece during her long academic career. Many of her colleagues praised her research achievements in the field of Nuclear Physics and Applications as well as her educational skills supervising and supporting the dissertations of many young scientists.

The symposium was organized under the auspices of the Physic Department of AUTH, with the financial support by the Hellenic Nuclear Physics Society, “TANDEM” Laboratory of NCSR “Demokritos” and the Research Committee of AUTH. Grateful thanks are due to all the above mention authorities as well as to several graduated and post-graduate students for their support to the specific event.

Thessaloniki 2020

Organizing Committee
T. Gaitanos
A. Ioannidou
C. Moustakidis
S. Stoulos

28th ANNUAL SYMPOSIUM OF THE HELLENIC NUCLEAR PHYSICS SOCIETY (HNPS – 2019)
31st May – 1st Jun, 2019, Aristotle University of Thessaloniki, Greece.

FRIDAY 31 st May 2019				
08:15 – 09:00	REGISTRATION			
SESSION I Chair: I. Stamatelatos NCSR				
TIME	Speaker	Affiliation	Title	
09:00 – 09:30	I. Giomataris	CEA	Progress in gaseous detectors (<i>invited</i>)	
09:30 – 09:50	S. V. Harissopoulos	NCSR	CALIBRA, a national research infrastructure for accelerator-based research and applications: A progress report	
09:50 – 10:10	T. Papaevangelou	CEA	A novel Beam Loss Monitor for the ESS Linac, based on a Micromegas neutron detector	
10:10 – 10:25	E. Charatsidou	KTH	The Nuclear Engineering and EMINE Master Programme, at KTH Royal Institute of Technology	
10:25 – 11:00	COFFEE BREAK			
SESSION II Chair : Stefan Typel TU Darmstadt				
11:00 – 11:30	Stefan Typel	GSI	From Nuclei to Stars with a Relativistic Density Functional (<i>invited</i>)	
11:30 – 11:50	T. S. Kosmas	UoI	First Coherent Elastic ν -Nucleus Scattering (CEvNS) measurements and the potential new physics involved	
11:50 – 12:05	S. Nikas	GSI	Exploring the astrophysical conditions for the creation of the first r-process peak, the impact of nuclear physics uncertainties	
12:05 – 12:20	V. Prassa	UoT	Microscopic description of induced fission dynamics with nuclear energy density functional	
12:20 – 12:35	S. Sarantopoulou	NCSR	Proxy-SU(3) predictions	
12:35 – 12:50	A. Martinou	NCSR	A mechanism for shape coexistence	
12:50 – 13:30	SESSION III, POSTER PRESENTATIONS			
13:30 – 15:00	LUNCH			
SESSION IV Chair: M. Frontasyeva JINR				
15:00 – 15:30	M. Frontasyeva	JINR	State-of-the-art of neutron activation analysis at Frank Laboratory of Neutron Physics of JINR, Dubna, Russia (<i>invited</i>)	
15:30 – 15:45	C. Tsabarlis	HCMR	GeoMAREA: A Gamma-ray spectrometer for in-situ marine environmental applications	
15:45 – 16:00	A. Clouvas	AUTH	Response of Radiation Portal Monitors to gamma radiation & detection capability of Orphan Radioactive Sources in scrap loads	
16:00 – 16:15	C. Eke	UoAkdeniz	Elemental Analysis of Sand Samples by Radio-activation	
16:15 – 16:30	A. Clouvas	AUTH	Electret Ion Chambers for Environmental Gamma Monitoring	
16:30 – 16:45	E. Benis	UoI	The APAPES project at the tandem accelerator facility of "Demokritos": A progress report	
16:45 – 17:00	A. Laoutaris	UoC	Production of hollow 2s2p 3,1P states in collisions of C4+ (1s2 1S, 1s2s 1,3S) ions with gas targets	
17:00 – 17:30	COFFEE BREAK			
SESSION V Chair: T. Lagogiannis NCSR				
17:30 – 17:50	R. Vlastou	NTUA	Neutron induced reactions on Ge isotopes and isomeric cross section study	
17:50 – 18:05	Z. Eleme	UoI	Cross-section measurement of ^{241}Am (n, γ) reaction at the Experimental Area 2 of the nTOF facility at CERN: First Results	
18:05 – 18:20	M. Lykiardopoulou	UoBritColumn	Mass measurements of neutron-deficient lanthanides around the neutron shell closure N=82	
18:20 – 18:35	E. Vagena	AUTH	Neutrons capture cross-sections of ^{74}Se in keV energy region using activation methods at a medical linear accelerator	
18:35 – 18:50	E. Georgali	UoI	Study of the ^{165}Ho ($n, 2n$) ^{164}Ho - ^{163}Ho reaction at near threshold energies	
19:00 – 20:45	HNPS General Assembly (HNPS members only)			
21:00	SYMPOSIUM DINNER			

28th ANNUAL SYMPOSIUM OF THE HELLENIC NUCLEAR PHYSICS SOCIETY (HNPS – 2019)
31st May – 1st Jun, 2019, Aristotle University of Thessaloniki, Greece.

SATURDAY 1st June 2019

SESSION VI Chair: T. Kosmas UoI			
TIME	Speaker	Affiliation	Title
09:00 – 09:15	A. Chorozidou	AUTH	NLD Equation of state for compressed, hot and relativistic nuclear matter
09:15 – 09:30	P. S. Koliogiannis	AUTH	Towards the Keplerian sequence: Realistic Equations of state in rapidly rotating neutron stars
09:30 – 09:45	Ch. Margaritis	AUTH	Dense matter and the effects of the speed of sound bounds on the bulk properties of neutron stars in the Keplerian sequence
09:45 – 10:00	A. Kanakis-Pegios	AUTH	Constraints on neutron stars equation of state using the tidal deformability derived from BNS mergers
10:00 – 10:15	M. Divaris	AUTH	Nuclear symmetry energy effects on the bulk properties of neutron rich-finite nuclei
10:15 – 10:45	COFFEE BREAK		
SESSION VII Chair: G. Kitis AUTH			
10:45 – 11:00	G. Eleftheriou	HCMR	Radiological Study of Anavatos Submarine Groundwater Discharge at Kiveri, Greece
11:00 – 11:15	A. Chatzichristos	UoBritColum	Studying nanoscale Li diffusion in rutile TiO ₂ using the β - and α -decay of ⁷ Li with β -NMR and α -radiotracer techniques
11:15 – 11:30	I. Kalaitzidou	AUTH	First results of the Performance of the DIAPHANE Detector in Apollonia's Tumulus
11:30 – 11:45	M. Şekerci	UoSD	An Investigation on Gamma-Ray Shielding Properties of Zr-Based Bulk Metallic Glasses
11:45 – 12:00	C. Eke	UoAkdeniz	Investigation of Photon Attenuation Properties of CR-39 Lens
12:00 – 12:15	I. K. Sfampa	AUTH	Dental restoration materials as personal accidental dosimeters
12:15 – 12:30	L. Malleitzidou	AUTH	On the possibility of dating calcium sulphate samples: Luminescence and dose rate measurements
12:30 – 13:30	LIGHT LUNCH		
SESSION VIII Chair: R. Vlastou NTUA			
13:30 – 13:45	M. Kokkoris	NTUA	MottCalc: A new tool for calculating Mott scattering differential cross sections for analytical purposes
13:45 – 14:00	T. Lagogiannis	NCSR	PIGE measurements at "Demokritos" TANDEM
14:00 – 14:15	i. H. Sarpür	UoAkdeniz	Angular Distribution of Elastic Neutron from ¹⁹ F and ¹² C Targets
14:15 – 14:30	E. Ntemou	NTUA	Measurement of the Differential Elastic Scattering Cross Sections of ² H on Light Elements, at Energies and Angles Suitable for EBS
14:30 – 14:45	M. Şekerci	UoSD	Production Cross-Section Calculations of ⁶² Cu via Charged Particles Induced Reactions
14:45 – 15:15	COFFEE BREAK		
SESSION IX Chair: S. Harissopoulos NCSR			
15:15 – 15:30	T. J. Mertzimekis	NKUA	gSPEC at FAIR
15:30 – 15:45	A. Khaliel	NKUA	Investigating the structure properties of the low-lying states of ¹⁴⁰ Ba
15:45 – 15:00	Z. S. Turhan Irak	Uolgdir	HFB Calculations for Nucleon Densities of Nickel Isotopes
16:00 – 16:15	A. Stamatopoulos	NTUA	Study of the neutron induced fission cross-section of ²³ Np at CERN's n-TOF facility in the MeV region
16:15 – 16:30	A. Kalamara	NTUA	Measurement of the ²³⁴ U(n,f) cross section in the 15-19 MeV energy range
16:30	SYMPOSIUM CLOSED		

POSTER PRESENTATIONS

Name	Affiliation	Title
G. Alamanos E. Alvanou D. Armaanidou C. Athanassas D. Barmpas N. Bligoura K. Bosbotinis A. Charizanis S. Chasapoglou V. Chatzikos E. Daoulas I. S. Despoudis E. Georgali S. Giagizi I. Giaritzoglou G. Gkatis A. Ioannidou E. Kapashi K. Kehagia M. Kokkoris P. Konstantinidis P. Livadaros N. Maniatis D. Mavrikis E. Mitsi E. Mourati E. Ntalla S. Pantousa F.K. Pappa S. Pelonis K. Preketes-Sigalas I. H. Sarpin I. Sideris S. C. Konstantinos A. Theodorou Z. Tsagkala P. Tsamos K. Tsampa E. Tsoutsoumanos	NTUA NCSR NKUA AUTH NKUA AUTH NTUA NCSR NTUA UoI UoI AUTTH UoI NYUA AUTTH AUTTH AUTTH GAECC NTUA AUTTH HCMR NKUA NCSR NTUA NTUA NCSR NTUA HCMR NKUA NKUA UoA NKUA NKUA NKUA UoI UoI NKUA UoI NKUA UoI NCSR AUTTH	Measurement of the $^{203}\text{Tl}(\text{n},2\text{n})^{202}\text{Tl}$ reaction cross section at 17.7 MeV and 19.3 MeV $^{nat}\text{Mg}(\text{p},\text{p})^{nat}\text{Mg}$ differential cross-section measurement relevant to the EBS technique Production of isotopes of medical interest in $\text{p} + ^{nat}\text{Mo}$ reactions Simulation of a muographic analysis of a volcanic dome in Geant4 ^{112}Sn , ^{114}Sn , ^{118}Sn and ^{124}Sn (γ, n) average cross section measurement near to reaction threshold compared with TALYS theoretical calculations Measurement of differential cross sections of deuteron elastic scattering on ^{31}P for EBS purposes Cross-section measurements of the reaction $^{107}\text{Ag}(\text{p},\text{n})^{107}\text{Cd}$ at energies inside the Gamow window Retention of Radionuclides onto Natural (Raw and Modified) Materials Study of the $^{232}\text{Th}(\text{n},\text{f})$ Cross section at NCSR ‘Demokritos’ using Micromegas Detectors Neutron induced transmutations to tungsten for fusion energy applications Characterization of “Neoptolemos” Isotope production in 1-200 MeV $\text{p} + ^{54-58}\text{Fe}$ reactions Characterization of the Canberra BE5030 Broad Energy High Purity Germanium Detector by means of the GEANT4 Monte Carlo simulation package Comparative dosimetric radiotherapy analysis in rectal cancer Radon retrospective dosimetry in different environments Cross section measurements of (n,p) reactions on Ge isotopes Hot particles in air filters collected in Finland immediately after the Chernobyl accident Application of Nuclear Spectrometry Techniques for the Investigation of the Sorption of Radionuclides Environmental monitoring Programme around a phosphogypsum disposal area A Comparative Study of Stopping Power Calculations Implemented in Monte Carlo Codes and Compilations Radiation dose response of TL dosimeters at elevated temperatures ^{137}Cs vertical distribution at the Aegean sea: a study on mixing and advection of seawater masses Geant4 Simulations of the gSPEC Experimental Apparatus Radiological Characterization of Contaminated Pipes of Different Dimensions and Densities A detailed study of the high energy neutron flux (15-20 MeV) at NCSR ‘Demokritos’ using a BC501A liquid scintillator $^{198}\text{Hg}(\text{n},2\text{n})^{197m}\text{Hg}$ reaction cross sections at 17.7 and 19.3 MeV Development of a semi-empirical calibration method by using a LaBr ₃ (Ce) scintillation detector for NORM samples analyses Characterization of a neutron irradiation facility based on radionuclide sources using Monte Carlo simulations and activation dosimetry Inter-comparison exercise utilizing x- and γ -ray spectrometry An upgrade of the UoA nuclear electromagnetic moments database Differential cross-section measurements of the $^{31}\text{P}(\text{p},\text{p}'\gamma)^{31}\text{P}$ reaction for target characterization using the PIGE technique Angular Elastic Neutron Distribution Of ^{122}Te and ^{11}B ^{237}Np reactions with fast neutrons: a phenomenological study Natural radioactivity content in Italian bottled mineral waters Reactions between irradiation defects and carbon solute atoms in Fe studied by resistivity recovery measurements Proton-Induced Spallation Reactions on Fe targets Determination of Natural Radionuclides in the Region of Oil Shale-Fired Power Plants in Northwest Greece Macroscopic X-ray fluorescence characterization of Platinum Group Mineral inclusions in archaeological gold TL Dose response of Beryllium Oxide (BeO) radiation dosimeter at elevated temperatures

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TABLE OF CONTENTS

	<i>Page</i>
<i>Poster of the Symposium</i>	<i>ii</i>
<i>Preface</i>	<i>iii</i>
<i>Symposium Program</i>	<i>iv</i>
<i>List of Participants</i>	<i>vii</i>
<i>Table of contents</i>	<i>xi</i>

ORAL PRESENTATIONS

Investigating the structure of the low-lying states in ^{140}Ba <i>Khaliel, Mertzimekis, Bracco, Crespi, Florea, Papaioannou, Zagoraios, Stan, Turturica, Marginean</i>	1-6
CALIBRA: A national research infrastructure for accelerator-based research & applications: A progress report <i>Harissopoulos, Lagoyannis, Axiotis, Stamatelatos</i>	7-13
Preliminary results on the study of ^{237}Np (n, f) at n_TOF/EAR2 in energies related to nuclear waste transmutation <i>Stamatopoulos, the n_TOF Collaboration</i>	18-24
Measurement of the ^{234}U (n, f) cross section in the energy range between 14.8 and 17.8 MeV using Micromegas detectors <i>Kalamara, Chasapogloou, Michalopoulou, Stamatopoulos, Eleme, Kokkoris, Lagoyannis, Patronis, Vlastou</i>	25-32
An Investigation on Gamma-Ray Shielding Properties of Zr-Based Bulk Metallic Glasses <i>Şekerci, Özdogan, Kaplan</i>	48-55
Investigation of Photon Attenuation Properties of CR-39 Lens <i>Eke, Yildirim</i>	60-67
Production Cross–Section Calculations of ^{62}Cu via Charged Particles Induced Reactions <i>Sekerci, Özdogan</i>	68-73
Towards the Keplerian sequence: Realistic equations of state in rapidly rotating neutron stars <i>Koliogiannis-Koutmiridis, Moustakidis</i>	85-90
Nuclear Symmetry Energy Effects on the Bulk Properties of Neutron-rich Finite Nuclei <i>Divaris, Moustakidis</i>	91-94
Constraints on neutron stars equation of state using the tidal deformability derived from BNS mergers <i>Kanakis-Pegios, Moustakidis</i>	95-100
NLD Equation of State for compressed, hot and relativistic nuclear matter <i>Chorozidou, Gaitanos</i>	101-105
MottCalc: A new tool for calculating Mott scattering differential cross sections <i>Maragkos, Kokkoris, Lagogiannis</i>	112-120

GeoMAREA: A Gamma-ray spectrometer for in-situ marine environmental applications <i>Tsabarlis, Androulakaki, Patiris, Maragos, Eleftheriou, Pappa, Alexakis, Kokkoris, Vlastou</i>	138-142
Speed of sound constraints on maximally-rotating neutron stars <i>Margaritis, Koliogiannis-Koutmridis, Moustakidis</i>	155-159
Study of the ^{165}Ho ($n, 2n$) $^{164}\text{Ho}^{\text{g-m}}$ reaction at near threshold energies <i>Georgali, Patronis, Anastasiadis, Axiotis, Eleme, Harissopoulos, Kalamara, Karfopoulos, Kokkoris, Lagoyannis, Peoviti, Potiriadis, Savva, Stamatelatos, Stamati, Stamatopoulos, Vasilopoulou, Vlastou</i>	160-167
Microscopic description of induced fission dynamics with nuclear energy density functionals <i>Prassa, Tao, Zhao, Li, Nikšić, Vretenar</i>	168-174
Exploring the astrophysical conditions for the creation of the first r-process peak, and the impact of nuclear physics uncertainties <i>Nikas, Martínez-Pinedo, Wu, Sieverding, Reiter</i>	175-179
Isomeric Cross Section Study of Neutron Induced Reactions on Ge Isotopes <i>Vlastou, Kalamara, Gkatis, Stamatopoulos, Chasapoglou, Kokkoris, Axiotis, Lagoyannis, Stamatelatos</i>	180-184
Cross section measurement of $^{241}\text{Am}(n,f)$ reaction at the Experimental Area 2 of the n_TOF facility at CERN: First Results <i>Eleme, Patronis, Stamatopoulos, Tsinganis, Kokkoris, Michalopoulou, Diakaki, Vlastou and the n_TOF Collaboration</i>	189-194

POSTER CONTRIBUTIONS

^{237}Np reactions with fast neutrons: a phenomenological study <i>Sideris, Kolovi, Khaliel, Stamatopoulos, Mertzimekis</i>	14-17
Geant4 Simulations of the gSPEC Experimental Apparatus <i>Maniatis, Mertzimekis</i>	33-36
Simulation of a muographic analysis of a volcanic dome in Geant4 <i>Athanassas, Kitsaki, Alexopoulos, Gika, Maltezos</i>	37-47
Natural radioactivity content in Italian bottled mineral waters <i>Catani, Stamoulis, Esposito, Cicchella, Aslanoglou, Ioannides</i>	56-59
An upgrade of the UoA nuclear electromagnetic moments database <i>Pelonis, Mertzimekis</i>	74-76
Radon retrospective dosimetry in different environments <i>Giaritzoglou, Aslanoglou, Stamoulis, Alexandropoulou, Ioannides</i>	77-80
Characterization of a neutron irradiation facility using Monte Carlo simulations and activation dosimetry <i>Pantousa, Vasilopoulou, Savva, Kokkoris, Vlastou, Stamatelatos</i>	81-84

Study of the ^{232}Th (n, f) Cross Section Using Micromegas Detectors at NSCR ‘Demokritos’ <i>Chasapoglou, Tsantiri, Kalamara, Kokkoris, Michalopoulou, Stamatopoulos, Vlastou, Lagoyannis, Eleme, Patronis</i>	106-111
Inter-comparison exercise utilizing x- and γ -ray spectrometry <i>Pappa, Tsabarlis, Patiris, Eleftheriou, Androulakaki, Kokkoris, Vlastou</i>	121-125
$^{nat}\text{Mg}(\text{p},\text{p}_0)$ differential cross-section measurement relevant to the EBS technique <i>Alvanou, Lagoyannis, Axiotis, Bligoura, Harissopoulos, Kokkoris, Maragkos, Ntemou, Preketes-Sigalas</i>	126-130
Measurement of differential cross sections of deuteron elastic scattering on ^{31}P <i>Bligoura, Ntemou, Aslanoglou, Kokkoris, Lagoyannis, Maragkos, Misaelides, Patronis, Preketes-Sigalas</i>	131-137
A detailed study of the high energy neutron flux (15-20 MeV) at NCSR “Demokritos” using a BC501A liquid scintillator <i>Mitsi, Chasapoglou, Kalamara, Kokkoris, Michalopoulou, Stamatopoulos, Vlastou, Lagoyannis, Axiotis, Patronis, Eleme</i>	143-147
Proton irradiation and resistivity recovery in stages I & II of pure and carbon-doped Fe <i>Theodorou, Syskaki, Kotsina, Axiotis, Apostolopoulos</i>	148-151
Characterization of the Canberra BE5030 Broad Energy High Purity Germanium Detector by means of the GEANT4 Monte Carlo simulation package <i>Georgali et al.</i>	152-154
Cross Section Measurements of (n,p) Reactions on Ge Isotopes <i>Gkatis, Vlastou, Kalamara, Kokkoris, Stamatopoulos, Chasapoglou, Axiotis, Lagoyannis, Stamatelatos</i>	185-188
Neutron induced transmutations in tungsten for fusion energy applications: Preliminary results <i>Chatzikos, Savva, Vasilopoulou, Mergia, Stamatelatos, Terentyev, Stankovskiy, Messoloras</i>	195-198

ABSTRACT-ONLY CONTRIBUTIONS a1-a47