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Preface

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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:

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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

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

FRIDAY 31st May 2019

08:15 – 09:00	REGISTRATION		
SESSION I	Chair: I. Stamatelatos NCSR		
TIME	Speaker	Affiliation	Title
09:00 – 09:30	I. Giomatiris	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 Darmst.		
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. Tsabaris	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	UoAkdenez	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 C^{4+} ($1s2\ 1S, 1s2s\ 1,3S$) 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, f) reaction at the Experimental Area 2 of the nTOF facility at CERN: First Results
18:05 – 18:20	M. Lykiardopoulou	UoBritColum	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}Hog -m 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	Speaker	Affiliation	Title
09:00 – 09:15		AUTH	A. Choroziidou		NLD Equation of state for compressed, hot and relativistic nuclear matter
09:15 – 09:30		AUTH	P. S. Koliogiannis		Towards the Keplerian sequence: Realistic Equations of state in rapidly rotating neutron stars
09:30 – 09:45		AUTH	Ch. Margaritis		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		AUTH	A. Kanakis-Pegios		Constraints on neutron stars equation of state using the tidal deformability derived from BNS mergers
10:00 – 10:15		AUTH	M. Divaris		Nuclear symmetry energy effects on the bulk properties of neutron rich-finite nuclei
10:15 – 10:45	COFFEE BREAK				
SESSION VII	Chair: G. Kiftis	AUTH			
10:45 – 11:00		HCMR	G. Eleftheriou		Radiological Study of Anavalos Submarine Groundwater Discharge at Kiveri, Greece
11:00 – 11:15		UoBritColum	A. Chatzichristos		Studying nanoscale Li diffusion in rutile TiO ₂ using the β - and α -decay of ⁸ Li with β -NMR and α -radiotracer techniques
11:15 – 11:30		AUTH	I. Kalaitzidou		First results of the Performance of the DIAPHANE Detector in Apollonia's Tumulus
11:30 – 11:45		UoSD	M. Şekerci		An Investigation on Gamma-Ray Shielding Properties of Zr-Based Bulk Metallic Glasses
11:45 – 12:00		UoAkdeniz	C. Eke		Investigation of Photon Attenuation Properties of CR-39 Lens
12:00 – 12:15		AUTH	I. K. Sfampa		Dental restoration materials as personal accidental dosimeters
12:15 – 12:30		AUTH	L. Malletzidou		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		NTUA	M. Kokkoris		MottCalc: A new tool for calculating Mott scattering differential cross sections for analytical purposes
13:45 – 14:00		NCSR	T. Lagogiannis		PIGE measurements at "Demokritos", TANDEM
14:00 – 14:15		UoAkdeniz	İ. H. Sarpür		Angular Distribution of Elastic Neutron from ¹⁹ F and ¹² C Targets
14:15 – 14:30		NTUA	E. Ntemou		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		UoSD	M. Şekerci		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		NKUA	T.J. Mertzimekis		gSPEC at FAIR
15:30 – 15:45		NKUA	A. Khalil		Investigating the structure properties of the low-lying states of ¹⁴⁰ Ba
15:45 – 15:00		UoIgdır	Z. S. Turhan Irak		HFB Calculations for Nucleon Densities of Nickel Isotopes
16:00 – 16:15		NTUA	A. Stamatopoulos		Study of the neutron induced fission cross-section of ²³⁷ Np at CERN's n_TOF facility in the MeV region
16:15 – 16:30		NTUA	A. Kalamara		Measurement of the ²³⁴ U(n,f) cross section in the 1.5-19 MeV energy range
16:30	SYMPOSIUM CLOSED				

POSTER PRESENTATIONS

Na me	Affiliation	Title
G. Alamanos	NTUA	Measurement of the $^{203}\text{Tl}(n,2n)^{202}\text{Tl}$ reaction cross section at 17.7 MeV and 19.3 MeV
E. Alvanou	NCSR	$^{24}\text{Mg}(p,p)^{24}\text{Mg}$ differential cross-section measurement relevant to the EBS technique
D. Armaanidou	NCSR	Production of Isotopes of medical interest in $p + ^{238}\text{U}$ reactions
C. Athanassas	NKUA	Simulation of a muographic analysis of a volcanic dome in Geant4
D. Barmpas	AUTH	^{112}Sn , ^{114}Sn , ^{118}Sn and ^{124}Sn (γ, n) average cross section measurement near to reaction threshold compared with TALYS theoretical calculations
N. Bligoura	NKUA	Measurement of differential cross sections of deuteron elastic scattering on ^3P for EBS purposes
K. Bosbotinis	NKUA	Cross-section measurements of the reaction $^{107}\text{Ag}(p,n)^{107}\text{Cd}$ at energies inside the Gamow window
A. Charizanis	AUTH	Retention of Radionuclides onto Natural (Raw and Modified) Materials
S. Chasapoglou	NTUA	Study of the $^{232}\text{Th}(n,f)$ Cross section at NCSR 'Demokritos' using Micromegas Detectors
V. Chatzikos	NCSR	Neutron induced transmutations to tungsten for fusion energy applications
E. Daoulas	NTUA	Characterization of "Neoptolemos"
I. S. Despoudis	UoI	Isotope production in 1-200 MeV $p + ^{54-58}\text{Fe}$ reactions
E. Georgali	UoI	Characterization of the Canberra BE5030 Broad Energy High Purity Germanium Detector by means of the GEANT4 Monte Carlo simulation package
S. Giagtzis	AUTH	Comparative dosimetric radiotherapy analysis in rectal cancer
I. Giaritzoglou	UoI	Radon retrospective dosimetry in different environments
G. Gkatis	NYUA	Cross section measurements of (n,p) reactions on Ge isotopes
A. Ioannidou	AUTH	Hot particles in air filters collected in Finland immediately after the Chernobyl accident
E. Kapashi	AUTH	Application of Nuclear Spectrometry Techniques for the Investigation of the Sorption of Radionuclides
K. Kehagia	GAEC	Environmental monitoring Programme around a phosphogypsum disposal area
M. Kokkoris	NTUA	A Comparative Study of Stopping Power Calculations Implemented in Monte Carlo Codes and Compilations
P. Konstantinidis	AUTH	Radiation dose response of TL dosimeters at elevated temperatures
P. Livadaros	HCMR	^{137}Cs vertical distribution at the Aegean sea: a study on mixing and advection of seawater masses
N. Maniatis	NKUA	Geant4 Simulations of the gSPEC Experimental Apparatus
D. Mavrikis	NCSR	Radiological Characterization of Contaminated Pipes of Different Dimensions and Densities
E. Mitsi	NTUA	A detailed study of the high energy neutron flux (15-20 MeV) at NCSR 'Demokritos' using a BC501A liquid scintillator
E.Mourati	NTUA	$^{198}\text{Hg}(n,2n)^{197\text{m}}\text{Hg}$ reaction cross sections at 17.7 and 19.3MeV
E. Ntalla	NCSR	Development of a semi-empirical calibration method by using a $\text{LaBr}_3(\text{Ce})$ scintillation detector for NORM samples analyses
S. Pantousa	NTUA	Characterization of a neutron irradiation facility based on radionuclide sources using Monte Carlo simulations and activation dosimetry
F.K. Pappa	HCMR	Inter-comparison exercise utilizing x- and γ -ray spectrometry
S. Pelonis	NKUA	An upgrade of the UoA nuclear electromagnetic moments database
K. Preketes-Sigalas	NKUA	Differential cross-section measurements of the $^{31}\text{P}(p,p'\gamma)^{31}\text{P}$ reaction for target characterization using the PIGE technique
i. H. Sarpün	UoAkdeniz	Angular Elastic Neutron Distribution Of ^{122}Te and ^{11}B
I. Sideris	NKUA	^{237}Np reactions with fast neutrons: a phenomenological study
S. C. Konstantinos	UoI	Natural radioactivity content in Italian bottled mineral waters
A. Theodorou	NKUA	Reactions between irradiation defects and carbon solute atoms in Fe studied by resistivity recovery measurements
Z. Tsagkala	UoI	Proton-Induced Spallation Reactions on Fe targets
P. Tsamos	AUTH	Determination of Natural Radionuclides in the Region of Oil Shale-Fired Power Plants in Northwest Greece
K. Tsampa	NCSR	Macroscopic X-ray fluorescence characterization of Platinum Group Mineral inclusions in archeological gold
E. Tsoutsoumanos	AUTH	TL_Dose response of Beryllium Oxide (BeO) radiation dosimeter at elevated temperatures

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