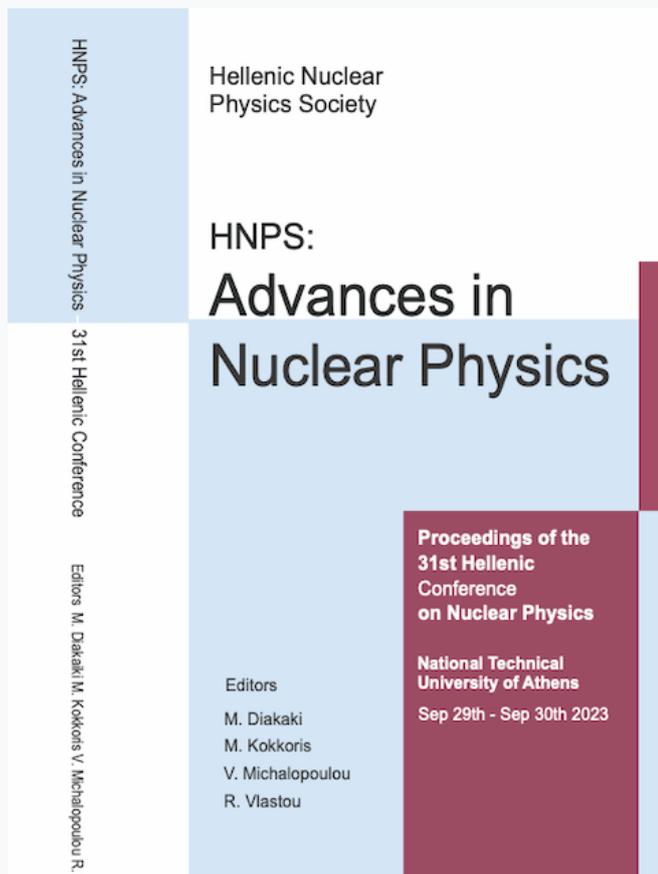


HNPS Advances in Nuclear Physics

Vol 30 (2024)

HNPS2023



Preface to HNPS2023 volume

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To cite this article:

Diakaki, M., Kokkoris, M., Michalopoulou, V., & Vlastou, R. (2024). Preface to HNPS2023 volume. *HNPS Advances in Nuclear Physics*, 30, i-x. Retrieved from <https://eproceedings.epublishing.ekt.gr/index.php/hnps/article/view/7359>



H 2023 NPS

31st Annual Symposium of the Hellenic Nuclear Physics Society

29-30 September 2023

National Technical University of Athens
Zografou Campus

ORGANIZING COMMITTEE

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Michael Kokkoris

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TOPICS

Nuclear Reactions

Nuclear Structure

Nuclear Astrophysics

Nuclear Physics Applications

Accelerator Physics

<https://hnps2023.physics.ntua.gr/>



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FRIDAY, 29/9/2023

08:30-09:00 Registration, Main Auditorium

09:00-09:30 Welcome Addresses

Session 1: Invited Presentations, Chair: R. Vlastou

09:30-10:00 A. Gurbich, 'Determination of the Stopping Power and Range of Ions in Matter by Resonance Methods' [Abstract](#)

10:00-10:30 A. Chebboubi, 'Study of fission products characteristics with the LOHENGRIN spectrometer' [Abstract](#)

10:30-11:00 A. Pakou, 'Global studies of reactions with weakly bound nuclei at sub- and near- barrier energies' [Abstract](#)

11:00-11:30 Coffee Break

Session 2: Neutron Physics, Chair: M. Diakaki

11:30-11:45 V. Michalopoulou, 'Measurement of the $^{235}\text{U}(n,f)$ cross-section using the $^{10}\text{B}(n,\alpha)$ reaction as reference at

EAR-2 of n_{TOF} at CERN: first results'

11:45-12:00 S. Dede, 'Production of actinide targets using Solution Combustion Synthesis and the effects after Ion and Neutron irradiation' [Abstract](#)

12:00-12:15 S. Chasapoglou, 'Study of (n,x) Reactions on Ge isotopes in the Energy Range Between 15.5 and 18.9 MeV Implementing Enriched Ge Targets' [Abstract](#)

12:15-12:30 G. Gkatis, 'Angular distribution measurements of neutron elastic scattering by natural carbon' [Abstract](#)

12:30-12:45 N. Kyritsis, 'First Results from the $^{243}\text{Am}(n,f)$ cross-section measurement at the nTOF facility at CERN' [Abstract](#)

12:45-13:00 K. Kaperoni, 'Characterization of Diamond Detector Response to Neutron Beams at the NCSR "Demokritos"' [Abstract](#)

13:00-13:15 S. Goula, 'Charged particle spectroscopy using a ring-shaped silicon nTD detector: First results on the detector's response using a neutron converter target at n_{TOF} /CERN' [Abstract](#)

13:15-14:30 Photo + Light lunch

Session 3: Nuclear Reactions, Nuclear Astrophysics, Nuclear Structure, Chair: Th. Mertzimekis

14:30-14:45 M. Kokkoris, 'Measured, Evaluated, and Benchmarked Differential Cross Sections for Proton Elastic Scattering on natN in the Energy Range E=3-5 MeV' [Abstract](#)

14:45-15:00 A. Tsantiri, 'Constraining the Astrophysical γ Process: Cross Section Measurements of (p,γ) Reactions in Inverse Kinematics' [Abstract](#)

15:00-15:15 S. Koulouris, 'Multinucleon Transfer Reactions in the ^{70}Zn (15 MeV/nucleon) + ^{64}Ni System: Detailed Studies

15:15-15:30 K. Palli, 'Elastic Scattering of $^{8\text{B}+^{90}\text{Zr}}$ at Sub-barrier Energies' [Abstract](#)

15:30-15:45 A. Zyriliou, 'Nuclear structure investigations in medium-weight isotopes'

15:45-16:00 M. Efstathiou, 'Nuclear lifetime measurements around $Z=50$ ' [Abstract](#)

16:00-16:15	P. Vasileiou, 'Fast-timing measurements of nuclear lifetimes in the Z~50 region'	Abstract
16:15-16:30	S. Pelonis, 'Design and simulations of a linear Paul trap for single-ion spectroscopy'	Abstract
16:30-17:00	Coffee Break	
Session 4: Neutron Physics, Nuclear Astrophysics, Nuclear Reactions, IBA, Chair: A. Lagoyannis		
17:00-17:15	A. Stamatopoulos, 'The 88Zr study at DICER at LANSCE'	Abstract
17:15-17:30	P. Gastis, 'Fission-Fragment Mass Spectrometry at the Los Alamos Neutron Science Center Facility'	Abstract
17:30-17:45	P. Tsintari, 'Direct (p,n) Reaction Measurements of Astrophysical Interest Using Radioactive Beams: A Novel Approach with SECAR'	Abstract
17:45-18:00	N. Dimitrakopoulos, 'Extraction of the Nuclear Level Density of the neutron rich isotopes 68Cu & 65Ni using the LANSCE/WNR neutron beams and the evaporation technique'	Abstract
18:00-18:15	M. E. Stamati, 'Nuclear Astrophysics at NEAR/n_TOF: Data analysis of first MACS measurements'	Abstract
18:15-18:30	E. Ntemou, 'Lattice-site location of Mn in Mn-rich Sb2Te3 topological insulators using MeV ion channeling'	Abstract
18:30-18:45	F. Maragkos, 'Systematic study of 3He – induced reactions and elastic scattering on light isotopes for applications in Ion Beam Analysis'	Abstract
18:45-20:45	General Assembly of HNPS	
21:00	Conference Dinner at Liatiko Restaurant	

SATURDAY, 30/9/2023

Session 5: Theoretical Nuclear Physics, Chair: A. Martinou

09:00-09:15	D. Bonatsos, 'Shape/phase transitions and shape coexistence in even-even nuclei'	Abstract
09:15-09:30	Ch. C. Moustakidis, 'The multi-messenger nuclear physics of neutron stars'	Abstract
09:30-09:45	V. Prassa, 'Covariant density functional description of shape phase transitions and shape coexistence in heavy nuclei'	Abstract
09:45-10:00	D. K. Papoulias, 'Probing new physics with nuclear recoil data from COHERENT'	Abstract
10:00-10:15	K. Foliás, 'Study of quarkyonic matter and applications in neutron stars'	Abstract
10:15-10:30	M. Vikiaris, 'Supramassive compact objects with neutron star and dark matter origins'	Abstract
10:30-10:45	P. Laskos-Patkos, 'Signatures of hadron-quark phase transition through the r -mode instability in twin stars'	Abstract
10:45-11:15	Coffee Break	

Session 6: Instrumentation, Cultural Heritage, Nuclear Materials, Chair: Th. Vasilopoulou

11:15-11:30	I. Savvidis, 'Large Volume Spherical Proportional Counter for Dark Matter Detection From the $\Phi=60\text{cm}$ Sphere to the $\Phi=3\text{m}$ Sphere and the New Design of the Sensors'	Abstract
11:30-11:45	A. G. Karydas, 'Fundamental X-ray studies using Synchrotron Radiation'	Abstract
11:45-12:00	E. Androulakaki, 'A modular custom-built Macro-XRF spectrometer for Heritage Science'	Abstract
12:00-12:15	G. Savvidis, 'Reactor neutrino detection with the NEWS-G3 experiment'	Abstract
12:15-12:30	S. Pantoussa, 'Fe+ ion irradiation of Fe-10at%Cr alloys at 300oC: Magnetic and structural effects'	Abstract
12:30-12:45	V. Chatzikos, 'Positron Annihilation Study of Neutron-Induced Defects in Single Crystal Tungsten: Effects of Irradiation Dose and Temperature'	Abstract
12:45-13:00	M. Giamouridou, 'Proton irradiation studies of Uranium Nitride (UN) and (U,Zr)N composite fuels'	Abstract
13:00-13:15	I. Goula, 'A study on the wall effect of Spherical Proportional Counter for long-range particle detection'	Abstract

13:15-14:15 Light lunch

14:15-15:15 Poster Session

Session 7: Environment, Chair: A. Ioannidou

15:15-15:30	A. Clouvas, 'A comparative analysis of Cs-137 soil migration over a thirty six years study period (1987-2023) : Experimental measurements vs. compartment model predictions'	Abstract
15:30-15:45	G. Trabidou, 'Inventory of natural radionuclides in the Greek mineral springs'	Abstract
15:45-16:00	D. L. Patiris, 'Radioactivity mapping of beach sand by mobile in situ gamma-ray spectrometry'	Abstract

16:00-16:15	K. Karfopoulos, 'Joint IAEA/EEAE Regional Intercomparison Exercise on Radioanalytical Analysis of NORM Samples'	Abstract
16:15-16:30	N. Salpadimos, 'Atmospheric Dispersion Software Intercomparison Exercise and Sensitivity of Results'	Abstract
16:30-16:45	I. Madesis, 'αSPECT: Adaptation of existing radon detectors to deep-sea operation'	Abstract
16:45-17:00	G. Siltzovallis, 'Validation and Testing of Novel Underwater Sensors at the Hydrothermal Vent Field of Milos'	Abstract
17:00-17:15	F. K. Pappa, 'Radioactivity in building materials used in Lesbos, Greece'	Abstract
17:15-17:45	Coffee Break	
Session 8: Nuclear Theory, Nuclear Reactions, Nuclear Materials, Chair: Ch. Tsabararis		
17:45-18:00	E. Krotscheck, 'Triplet pairing in neutron matter'	Abstract
18:00-18:15	T. S. Kosmas, 'Open problems in conventional and exotic muon physics: Predictions of numerical solutions of fundamental differential equations'	Abstract
18:15-18:30	O. Sgouros, 'A global description of the 18O+48Ti collision within the NUMEN project'	Abstract
18:30-18:45	V. Soukeras, 'Recent results in the study of the 20Ne + 130Te collision within the NUMEN project and future perspectives'	Abstract
18:45-19:00	P. T. Oikonomou, 'Colour-Flavour Locked Quark Stars in light of the Compact Object in HESS J1731-347 and the GW190814 Event'	Abstract
19:00-19:15	E. Charatsidou, 'Advancements in Nuclear Engineering and Nuclear Materials: Insights from Sweden's SUNRISE Centre and Initiatives on Public Acceptance'	Abstract
19:15	Closing Remarks for HINPS 2023	

POSTER SESSION, SATURDAY 30/9/2023, 14:15-15:15

- P-1** L. Amanatidis, 'Flux determination for the 18 MeV Neutron Beam at NCSR "DEMOKRITOS" using the multiple foil activation method' [Abstract](#)
- P-2** M. J. Anagnostakis, 'An Improved Technique for Monitoring Radon Progeny in Ambient Air' [Abstract](#)
- P-3** Z. Bari, 'Cross Section Measurements and Theoretical Study of the $^{174,176}\text{Hf}(n,2n)^{173,175}\text{Hf}$ Reactions' [Abstract](#)
- P-4** A. I. Barlas, 'A comparative study of γ -ray spectrometers in various applications' [Abstract](#)
- P-5** G. Eleftheriou, 'High resolution gamma-ray spectrometry of environmental samples at MERL, HCMR' [Abstract](#)
- P-6** O. Fasoula, 'Detailed Study of Multinucleon Transfer Mechanisms in $^{86}\text{Kr} + ^{64}\text{Ni}$ at 15 MeV/nucleon' [Abstract](#)
- P-7** F. P. Gelatsoras, 'A study of natural radioactivity in urban parks' [Abstract](#)
- P-8** S. Georgiou, 'Microdosimetric Modelling of Neutron Capture Therapy Effectiveness' [Abstract](#)
- P-9** Ch. Giannitsa, 'Signatures of Clustering and Cluster Transfer in Peripheral Collisions of ^{40}Ar on ^{64}Ni at 15 MeV/nucleon' [Abstract](#)
- P-10** K. Gkatzogias, 'Detailed Studies of Multinucleon Transfer in ^{40}Ar ($^{15}\text{MeV/nucleon}$) + ^{64}Ni via High-Resolution Studies of Momentum Distributions' [Abstract](#)
- P-11** M. Kagioglou, 'Neutron Induced Reactions on ^{203}Tl at 15.7 MeV, 16.0 MeV and 18.0 MeV' [Abstract](#)
- P-12** A. Kalamara, 'Neutron Dosimetry at HK-1 beam line of LVR-15 reactor for Biomedical Sample Irradiations' [Abstract](#)
- P-13** A. Karakaxi, 'Study and Validation of Differential Cross Sections for Deuteron-Induced Reactions in ^{13}C , Suitable for NRA' [Abstract](#)
- P-14** A. Kotsovolou, 'Differential Cross-Section Measurements of the $^{18}\text{O}(p, \alpha^0)$ Reaction at 1700 and 1600, in the Energy Range $E_p=1-2\text{MeV}$, for NRA Purposes' [Abstract](#)
- P-15** I. Koukoultsou, 'Dose distribution in boron neutron capture therapy for the treatment of brain cancer' [Abstract](#)
- P-16** R. Kourgiantakis, 'Radiological characterization of ITER materials' [Abstract](#)
- P-17** D. Lazaraki, 'Gamma-spectroscopic analysis of NORM samples' [Abstract](#)
- P-18** E. Mitsi, 'Quantifying athermal recombination corrected radiation damage in ion irradiated Fe and W utilizing the SRIM code' [Abstract](#)
- P-19** N. G. Nicolis, 'Monte-Carlo calculations of evaporation and fission in excited spallation reaction fragments' [Abstract](#)
- P-20** M. Peoviti, 'Tallys calculations for α capture reactions on Cu isotopes' [Abstract](#)
- P-21** S. K. Roumelioti, 'Radio-dating method of ^{210}Pb in a marine sediment core from the deep basin Northern of Skyros Isl., Aegean Sea' [Abstract](#)

- P-22** P. K. Rouni, 'EDXRF analysis of metallic powders used in 3D printing of dental prosthetics' [Abstract](#)
- P-23** P. E. Sideri, 'An operational radiation safety intervention: Minimizing dose in lab spaces due to photon sources in adjacent storage room' [Abstract](#)
- P-24** A. Skouloudaki, 'Study of ^{233}U (n,f) reaction's cross section using Micromegas detectors' [Abstract](#)
- P-25** V. Theodoropoulos, 'A study of the nuclear structure of even-even Te isotopes using the IBM-1' [Abstract](#)
- P-26** I. Tsormpatzoglou, 'Cross section biasing in $^3\text{H}(d,n)^4\text{He}$ reaction using the GEANT4 toolkit' [Abstract](#)
- P-27** T. Zafeiris, 'Radioactivity studies in soils from Northwestern Greece' [Abstract](#)
- P-28** A. Ziagkova, 'Installation of the new TOF – ERDA setup at N.C.S.R. "Demokritos"' [Abstract](#)
- P-29** A. Ioannidou, 'Spectroscopic limitations of hand-held γ -spectrometers' [Abstract](#)
- P-30** Th. V. Papavasileiou, 'Studying muonic atoms with advanced numerical solutions of the Dirac-Breit-Darwin equation' [Abstract](#)
- P-31** A. N. Gkrepis, 'Derivation of advanced Python code for solving the Dirac-Coulomb-Breit equation in muonic atoms' [Abstract](#)

PREFACE

This volume contains the Proceedings of the 31st Hellenic Conference on Nuclear Physics, held in the National Technical University of Athens on the 29th and 30th and of September 2023. 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 involving Nuclear Physics. 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 use of local facilities along with facilities around the world. 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 Technical University of Athens (NTUA). Grateful thanks are due to all the authorities of NTUA and particularly to the School of Applied Mathematics and Physical Sciences and the Rector for the financial support, the technical assistance and the facilities provided for the successful organization of the conference. The help during the conference by several graduate and undergraduate students (Lampros Amanatidis, Sotirios Chasapoglou, Aggelos Dimitriadis, Kalliopi Kaperoni, Anna Karakaxi, Nikolaos Kyritsis, Rafail Kourgiantakis, Despina Lazaraki, Zoi Mpari, Anna Skouloudaki, Ioannis Tsormpatzoglou, Anastasia Ziagkova) is also warmly appreciated.

Athens 2024

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Michael Kokkoris
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