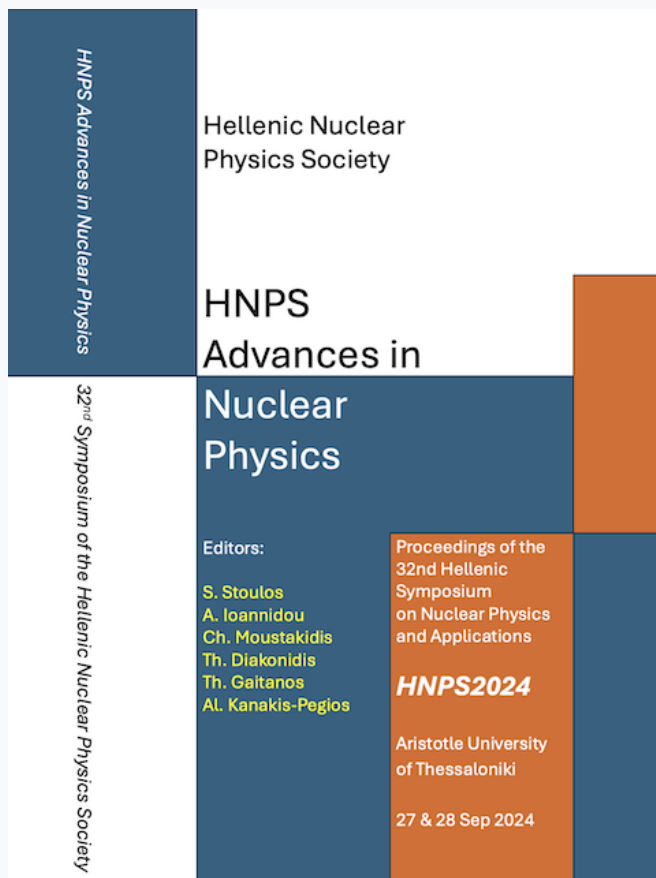


HNPS Advances in Nuclear Physics

Vol 31 (2025)

HNPS2024



The cover image features a blue and orange color scheme. On the left, a vertical blue bar contains the text "HNPS Advances in Nuclear Physics" and "32nd Symposium of the Hellenic Nuclear Physics Society". The main title "HNPS Advances in Nuclear Physics" is prominently displayed in the center. Below the title, the editors' names are listed: S. Stoulos, A. Ioannidou, Ch. Moustakidis, Th. Diakonidis, Th. Gaitanos, and A. Kanakis-Pegios. To the right, an orange box contains the text "Proceedings of the 32nd Hellenic Symposium on Nuclear Physics and Applications", "HNPS2024", "Aristotle University of Thessaloniki", and "27 & 28 Sep 2024".

Editorial

Stylios Stoulos, Charalambos Moustakidis, Alexandra Ioannidou, Th. Diakonidis, Theodoros Gaitanos, A. Kanakis-Pegios

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To cite this article:

Stoulos, S., Moustakidis, C., Ioannidou, A., Diakonidis, T., Gaitanos, T., & Kanakis-Pegios, A. (2025). Editorial. *HNPS Advances in Nuclear Physics*, 31, i-viii. Retrieved from <https://eproceedings.epublishing.ekt.gr/index.php/hnps/article/view/8211>

32nd Symposium of the Hellenic Nuclear Physics Society

27-28 September 2024



HNPS 2024

32ND SYMPOSIUM OF THE
HELLENIC NUCLEAR PHYSICS
SOCIETY

Thessaloniki

www.hnps2024.physics.auth.gr

Symposium is organized by the Department of Physics of the Aristotle University of Thessaloniki and will be held on September 27 – 28, 2024, at the premises of the Research Dissemination Center.

The scientific program is expected to include the most recent advances in the field, covering the following topics:

- Nuclear Structure
- Nuclear Reactions
- Nuclear Astrophysics
- Nuclear Physics Applications
- Accelerator Physics & Instrumentation

Organizing Committee

- S. Stoulos
- A. Ioannidou
- Ch. Moustakidis
- Th. Diakonidis
- Th. Gaitanos
- Al. Kanakis-Pegios



HELLENIC NUCLEAR PHYSICS SOCIETY

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32ND HELLENIC CONFERENCE

ON

NUCLEAR PHYSICS

ARISTOTLE UNIVERSITY OF

THESALONIKI 27 & 28 SEPTEMBER 2024

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FRIDAY, 27/09/2024

09:00-10:00 Registration, Welcome Addresses

Session 1: Chair: I. Kaissas

10:00-10:20 M. Kokkoris, 'Study of Fundamental Channeling Parameters in a Diamond Crystal Using EBS and NRA with Protons and Deuterons'

10:20-10:40 P. Koseoglou, 'The Temperature-dependent Relative Self-Absorption technique: experimental setup and analysis simulations'

10:40-11:00 D. Papanikolaou, 'Neutron capture reactions for nuclear astrophysics: Development & characterization of an innovative detection setup based on trans-Stilbene organic scintillators'

11:00-11:20 M. Peoviti, 'First results from cross-section measurements of α -capture reactions on ^{93}Nb and ^{96}Mo relevant to nuclear astrophysics'

11:20-11:40 N. Kyritsis, 'Differential Cross Section Measurements on $d+^{13}\text{C}$ Reactions, Suitable for $d\text{-NRA}$ '

11:40-12:20 Coffee Break

Session 2: Chair: A. Lagoyannis

12:20-12:40 I. Kaissas, 'Comparative Measurements of Greek Lignite Ash and Disposal Materials'

12:40-13:00 N. Salpadimos, 'Assessment of the Total Effective Dose to the Representative Person in Greece, after a Hypothetical Release from a Neighboring Nuclear Power Plant'

13:00-13:20 K. Kaperoni, 'Diamond, Si and SiC Detector Study for the Detection of 2.45 MeV Fusion Neutrons'

13:20-13:40 K. Papadopoulou, 'Calibration of a whole body counter system for dose assessment in emergency situations'

13:40-15:20 Light Lunch

Session 3: Chair: M. Kokkoris

15:20-15:40 J. Thereska, 'Residence Time Distribution for process hydrodynamics investigation'

15:40-16:00 V. Prassa, 'A probabilistic neural network in evaluating energy dependent fission yields'

16:00-16:20 K. Karakatsanis, 'Shape coexistence of neutron deficient isotopes near the $Z = 82$ closure with relativistic energy density functional theory'

16:20-16:40 D. Antypas, 'Studies of parity violation in atomic ytterbium'

16:40-17:00 Z. Bari, 'Cross Section Measurements and Theoretical Study of Neutron Induced Reactions on Hf Isotopes'

17:00-19:00 General Assembly of HNPS

21:00 Conference Dinner

SATURDAY, 28/09/2024

Session 5: Chair: V. Prassa

- 10:00-10:20** A. Clouvas, 'Radon in domestic water in Greece'
10:20-10:40 S. Goula, 'Charged-particle detection at n_TOF/CERN: First results using a highly segmented silicon detector'
10:40-11:00 I. Goula, 'Atmospheric neutron measurements with the large volume spherical proportional counter and the problem of the protons wall effect in the $^{14}\text{N}(n,p)^{14}\text{C}$ reaction'
11:00-11:20 G. Kousidou, 'Impact of climate change to sedimentation processes and microplastics' gradients: a case study in a semi-closed deep ocean system, Lemnos basin, Greece'
11:20-11:40 Z. Maniati, 'Reconstruction of radionuclides' concentration in semi-closed ocean systems using nuclear methods: a case study at North Cretan basin, Greece'
11:40-12:00 A. Savidou, 'Innovative Techniques for Radiological Characterization and Management of Metallic Waste from Nuclear Facility Decommissioning'

12:00-12:30 Coffee Break

12:00-12:30 Poster Session

Session 6: Chair: Th. Gaitanos

- 12:30-12:50** A. Choroizidou, 'Momentum dependence of in-medium potentials: A solution to the hyperon puzzle in neutron stars'
12:50-13:10 P. Laskos-Patkos, 'Maximally stiff equations of state and the structure of hybrid stars'
13:10-13:30 M. Divaris, 'Symmetry energy effects on the quark deconfinement phase transition'
13:30-13:50 K. Foliás, 'Study of quarkyonic matter and applications in neutron stars'
13:50-14:10 M. Vikiaris, 'Neutron Star-Dark Matter admixed compact object in the Mass Gap'
14:10-14:30 K. Kourmpetis, 'Nuclear Equation of State Constraints in view of the HESS J1731-347 Event'

14:30 Closing Remarks for HNPS 2024

POSTER SESSION, SATURDAY 27/09 12:00-12:30

- P-1** N. Petropoulos, 'Neutronic performance of ^{11}B -Enriched B4C as an alternative coating layer for TRISO fuel'
- P-2** A. Dimitriadis, 'Monte-Carlo and experimental study of refurbished high-purity germanium detectors (HPGe)'
- P-3** A. Miliadou, 'Effective cross-section of the ^{65}Cu and $^{66}, ^{70}\text{Zn}$ (γ, n) reaction for endpoint 14 MeV comparison with TALYS and EMPIRE code'
- P-4** K. Tsitsekidis, K. Tzioumari, 'Geant4 simulations for detector developments at n_TOF/CERN: γ -ray counting and in beam spectroscopy'
- P-5** A. Liaska, 'Removal of radionuclides from liquid waste using recycling by-products by application of nuclear techniques'
- P-6** A. Koutsostathis, 'Upgrades and maintenance of the CRYRING@ESR electron cooler for improved internal electron target operation'
- P-7** F. Karantoumanis, 'Sorption of radiocesium onto Greek Zeolites and Bentonites in acidic and cementitious solutions'
- P-8** S. Georgakopoulou, 'Neutron generator shielding optimization studies using Monte Carlo simulations'
- P-9** V. Tsioulos, 'Gaussian Mixture Regression in Analyzing Fission Charge Yields'
- P-10** A. Ouzounis, 'A Review of Methodologies for Measuring Geogenic Radon Flux'

PREFACE

This volume contains the Proceedings of the 32nd Hellenic Conference on Nuclear Physics, held in the Aristotle University of Thessaloniki on the 27th and 28th and of September 2024. 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 Physics Department of Faculty of Science of AUTH. Grateful thanks are due to all the authorities of the Faculty of the Science of AUTH and the Rector for the financial support as well as to the Special Account for Research Funds (ELKE) of AUTH for the technical assistance and the facilities provided for the successful organization of the conference. We would especially like to thank Associate Professor Theodoros Mertzimekis for the organization, editing, and completion of these proceedings.

Thessaloniki 2025

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A. Ioannidou
Ch. Moustakidis
Th. Diakonidis
Th. Gaitanos
A. Kanakis-Pegios