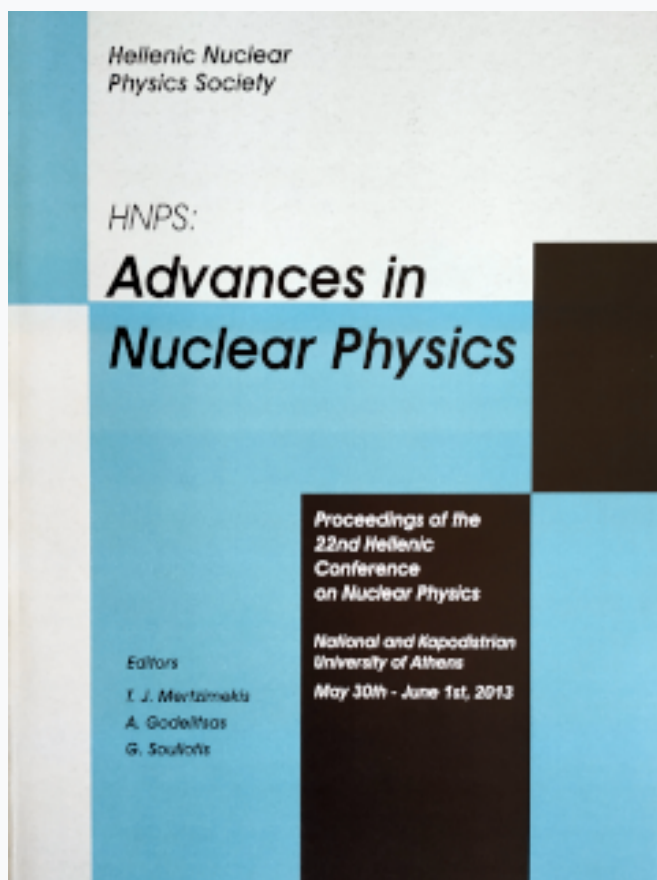


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# Hellenic Nuclear Physics Society



Proceedings

The 22<sup>nd</sup> Symposium  
of the Hellenic Nuclear Physics Society

## HNPS2013



May 30<sup>th</sup> and June 1<sup>st</sup> 2013

Amphitheater "Aristotelis"  
Department of Physics

National and Kapodistrian  
University of Athens

# The Hellenic Nuclear Physics Society

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# Preface

HNPS2013 was held on May 30<sup>th</sup> and June 1<sup>st</sup>, 2013 in the premises of the University of Athens. HNPS2013 is the 22<sup>nd</sup> in a series of Symposia organized by the Hellenic Nuclear Physics Society. The series has been running almost without interruption since 1990 when the Hellenic Nuclear Physics Society was founded originally. The Hellenic Nuclear Physics Society acts as the official body of Greek scientists working in the field of fundamental Nuclear Physics and related applications.

During the Symposia, the latest research activities by the members of the Society and guests are presented; future collaborations are discussed; policies are drawn; and young scientists are given the opportunity to show their research to a broader audience and develop their careers. The thematics of the Symposia span a wide range, from fundamental physics problems to applications of Nuclear Physics in other disciplines, in both theory and experiment.

HNPS2013 was hosted in the University of Athens under the aegis of the School of Science Office of the Dean, the Faculty of Physics and the Faculty of Chemistry. The Organizing Committee are particularly grateful to all sponsors for their financial and technical support, as well as the provision of facilities and services that resulted in a successful organization. The assistance and volunteering work of a few undergraduate students is greatly acknowledged (E.-M. Asimakopoulou, A. Kanellakopoulos, V. Lagaki, and E. Malami).

The present Volume contains full papers and abstracts of 34 oral and 22 poster contributions presented during the Symposium. The papers were prepared and submitted by the authors and have been edited solely for typographical errors and formatting, where needed.

*Athens, May 2014*

*Theo J. Mertzimekis  
Athanasios Godelitsas  
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*Zouros, Theo J.M. (Univ. of Crete)*

**FRIDAY 31.05.2013**

08:30 – 09:00	Registration
09:00 – 09:15	HNPS2013 Welcome Speeches

## Session I – Chair R. Vlastou

09:15 – 10:00	W. Plessas	<i>Baryon Properties from Relativistic Constituent-Quark Models</i>
10:00 – 10:15	N. Davis	<i>Search for critical fluctuations of the proton density in A+A collisions at maximum SPS energy</i>
10:15 – 10:30	E. Mavrommatis	<i>Two-Nucleon Short-Range Correlations: An Update</i>
10:30 – 10:45	P. Giannaka	<i>Studying charge changing processes through the Gamow-Teller strength</i>
10:45 – 11:00	D.K. Papoulias	<i>Studying background processes of the exotic neutrino-nucleus reactions</i>
11:00 – 11:15	T.S. Kosmas	<i>Studying astrophysical neutrinos through the electron scattering data</i>
11:15 – 11:45	<b>COFFEE BREAK</b>	

## Session II – Chair A. Godelitsas

11:45 – 12:00	T. Vasilopoulou	<i>Large Sample Neutron Activation Analysis of a Peruvian Pottery Artifact</i>
12:00 – 12:15	K. Eleftheriadis	<i>Size distributions of airborne radionuclides from the Fukushima nuclear accident in Athens, Greece</i>
12:15 – 12:30	C. Tsabaris	<i>A theoretical study for the development of a deep sub-sea radioactivity system</i>
12:30 – 12:45	E. Androulakaki	<i>Radionuclide Characterisation in the Marine Sediment Using an Underwater Gamma-Ray Spectrometer in 2<math>\pi</math> Geometry</i>
12:45 – 13:00	A. Clouvas	<i>Measurements and Modeling of Cs-137 distribution on ground due to the Chernobyl accident. A twenty seven years follow-up study in Thessaloniki in northern Greece.</i>
13:00 – 13:15	A. Papadopoulos	<i>Natural radioactivity and radiation index of the major plutonic bodies in Greece</i>

13:15 – 15:00 **LUNCH BREAK / \*\*\*POSTER SESSION \*\*\***

## Session III – Chair G.A. Souliotis

15:00 – 15:30	M. Veselsky	<i>Symmetry energy and nucleon-nucleon cross sections</i>
15:30 – 15:45	C. Moustakidis	<i>Nuclear Equation of State Constraints from Tidal Deformability of Neutron Stars</i>
15:45 – 16:00	P. Papakonstantinou	<i>Densities and energies of nuclei in dilute matter</i>
16:00 – 16:15	P.N. Fountas	<i>Systematic Study of Neutron-Rich Rare Isotope Production in Peripheral Heavy-Ion Collisions at Beam Energies 15-25 MeV/u</i>
16:15 – 16:30	A. Lagoyannis	<i>Study of the <math>^{32}\text{S}(p,p'\gamma)^{32}\text{S}</math> reaction for resonant PIGE applications</i>
16:30 – 17:00	<b>COFFEE BREAK</b>	

## Session IV – Chair W. Plessas

17:00 – 17:30	A. Petrovici	<i>Exotic Structure and Decay of Medium Mass Nuclei near the Drip Lines</i>
17:30 – 17:45	S. Karampagia	<i>Proton-Neutron Interactions and Emergence of Collectivity</i>
17:45 – 18:00	D. Petrellis	<i>Critical point for the Deformation Dependent Mass Model through a variational procedure</i>
18:00 – 18:15	A. Martinou	<i>Parafermions in Interacting Many Body Systems</i>
18:15 – 18:30	P. Georgoudis	<i>Bohr Space in Six Dimensions</i>

18:30 – 19:15	General Assembly
20:00 -	Banquet at “Kapodistriakon”

<b>SATURDAY 01.06.2013</b>		
Session V – Chair M. Zamani		
09:30 – 09:45	M. Diakaki	<i>Fission cross section measurements with the MicroMegas detector</i>
09:45 – 10:00	M. Fragopoulou	<i>The response of a depleted p-MOSFET dosimeter to photons and electrons</i>
10:00 – 10:15	I. Katsiulas	<i>Nuclear Reactor Neutrons Detection with the Spherical Proportional Counter</i>
10:15 – 10:30	I. Savvidis	<i>Uranium - Plutonium Detection via the Neutron Emission</i>
10:30 – 10:45	V. Paneta	<i>Benchmarking Experiments for the Proton Backscattering on <math>^{23}\text{Na}</math>, <math>^{nat}\text{Si}</math>, <math>^{31}\text{P}</math>, and <math>^{nat}\text{S}</math> up to 4 MeV</i>
10:45 – 11:00	M. Kokkoris	<i>Measurement, Evaluation and Benchmarking of Selected Differential Cross-Sections Suitable for EBS (Elastic Backscattering Spectroscopy) and NRA (Nuclear Reaction Analysis)</i>
11:00 – 11:30	<b>COFFEE BREAK</b>	
Session VI – Chair E. Stiliaris		
11:30 – 11:45	G.G. Gennarakis	<i>Experimental Energy Resolution of a Paracentric Hemispherical Deflector Analyzer for Different Entry Positions and Bias</i>
11:45 – 12:00	A.-N. Rapsomanikis	<i>Simulating a Time-Resolved Optical Tomographic Modality</i>
12:00 – 12:15	M. Zioga	<i>A Real Time Motion Correction Technique for a Small-Field <math>\gamma</math>-Camera System</i>
12:15 – 12:30	T. Xenofontos	<i>Core Analysis of the Thessaloniki Student Training Nuclear Reactor Using Stochastic and Deterministic Approaches</i>
12:30 – 12:45	M. Zamani	<i>High energy fission cross sections induced by deuteron on <math>^{232}\text{Th}</math> and proton on <math>^{nat}\text{Pb}</math> targets</i>
12:45 – 13:00	R. Vlastou	<i>New high energy neutron facility at NCSR “Demokritos”</i>
HNPS2013 CLOSING		

<b>POSTERS</b>	<b>First Author</b>	<b>Title</b>
P01	V. Tsamis	<i>Characterization of Canberra BE3825 broad energy High Purity Germanium Detector by means of Geant4 Monte-Carlo simulation</i>
P02	M. Sotiropoulou	<i>Dose rate estimations of <math>^{134}\text{Cs}</math>, <math>^{137}\text{Cs}</math>, <math>^{131}\text{I}</math> in terrestrial herbivores using the ERICA tool</i>
P03	I.E. Stamatelatos	<i>Neutron streaming calculations in the JET entrance labyrinth</i>
P04	N. Chatzikonstantinou	<i>Using synchrotron radiation to study iron phases in Saharan dust samples from Athens skies</i>
P05	G. Trabidou	<i>Evaluation of dose rates to non-human biota in NORM and TENORM areas</i>
P06	A. Eleftheriou	<i>A study of the non-uniform attenuation in SPECT</i>
P07	I. Karachristou	<i>Radiation protection calculations for the new radioactive waste interim storage facility of NCSR “Demokritos”</i>
P08	E. Tsompopoulou	<i>Energy dispersive X-ray fluorescence spectroscopy</i>
P09	F. Pappa	<i>Sediment pollution by radionuclides and toxic metals in the Ierissos Gulf, North Aegean Sea, Greece</i>
P10	I. Madesis	<i>APAPES – Atomic Physics with Accelerators: Projectile Electron Spectroscopy</i>
P11	G. Eleftheriou	<i>Radionuclides and heavy metals concentrations at the seabed of NW Piraeus, Greece</i>
P12	A. Kalamara	<i>Measurement of the <math>^{241}\text{Am}(n,2n)^{240}\text{Am}</math> cross section at 17.5 MeV</i>
P13	Z. Kotsina	<i>Recovery of radiation damage in Fe-Cr alloys</i>
P14	D.L. Patiris	<i>Localization of a submarine groundwater source at the eastern coast of Black Sea-Georgia, using radiotracing techniques</i>
P15	M. Fakinou	<i>Neutron and capture gamma rays along the labyrinth of medical accelerators: Effect of neutron absorbing wall liner material</i>
P16	V. Kantarelou	<i>A study on the heterogeneity of reference metal alloys using a micro-XRF spectrometer</i>
P17	N. Vonta	<i>Microscopic calculations of low-energy fission within the CoMD (Constrained Molecular Dynamics) model: Preliminary results</i>
P18	V. Tsakstara	<i>Studying the coherent channel of neutral current <math>\nu</math>-nucleus interactions</i>
P19	E. Vagena	<i>Monte Carlo modelling of radiotherapy photon beams</i>
P20	I. Ioannidis	<i>Chernobyl still affects the environment of Greece: Recent Measurements of <math>^{137}\text{Cs}</math> in soil cores of Grevena-Trikala area</i>
P21	N. Moraitis	<i>Detailed spectroscopic studies of the aquatic environment using synchrotron radiation</i>
P22	E.-M. Assimakopoulou	<i>An experimental study of the astrophysically interesting <math>^{112}\text{Cd}(p,\gamma)^{113}\text{In}</math> reaction</i>

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