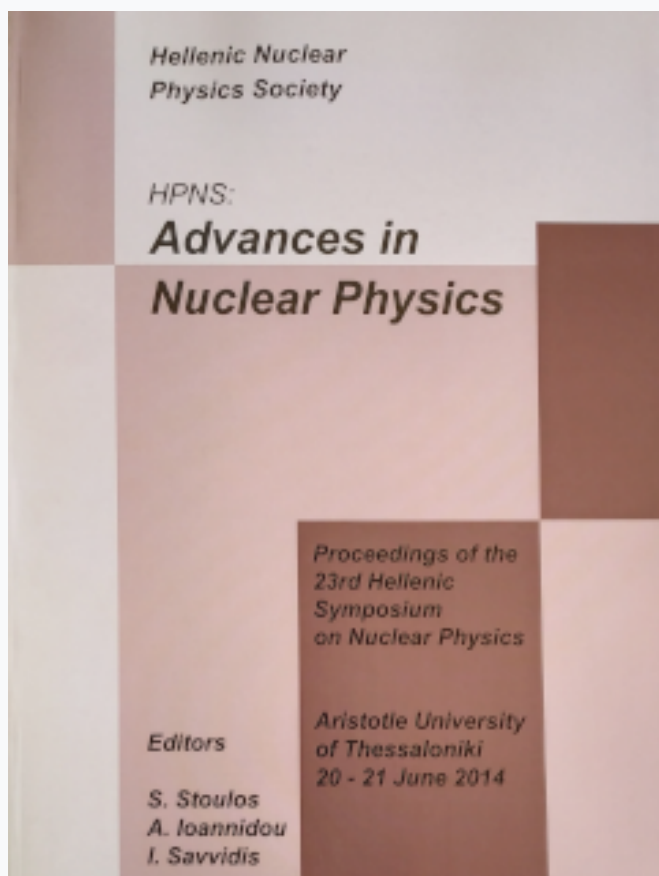


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# 23rd Hellenic Nuclear Physics Society Symposium, June 20-21, 2014

Physics Department, Aristotle University of Thessaloniki

## HNPS 2014

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

**Organised by  
Hellenic Nuclear Physics Society**

**Organising committee:**  
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## **PREFACE**

This volume contains the Proceedings of the 23<sup>rd</sup> Symposium of the Hellenic Nuclear Physics Society, held in Aristotle University of Thessaloniki on the 20<sup>th</sup> and 21<sup>st</sup> of June 2014 (HNPS-2014). 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.

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

Thessaloniki 2016

On the behalf of the Organizing Committee

M. Manolopoulou  
I. Savvides  
A. Ioannidou  
C. Moustakidis  
S. Stoulos

## **MEMORIAL of Metaxia Manolopoulou**



Metaxia Manolopoulou was born on 23<sup>rd</sup> of July 1960. She studied Physics in the Aristotle University of Thessaloniki and received her PhD in 1990. She was a member of Nuclear Physics Laboratory from 1983 and started her career as an academic teacher in 1996 at the Physics Department of AUTH.

Her research covered a wide range of activities with forefront contributions to Environmental Radioactivity and Radioecology; Radiation detection methods and Dosimetry as well as to Spallation sources – Accelerator Driven Systems and Transmutation experiments taken place at the JINR Dubna, Russia. She had also work in the frame of ATLAS project in CERN, Geneva, Switzerland. The 23<sup>rd</sup> Symposium of HNPS was the last scientific event that she participated since few months later she passed away due to lung cancer.

Metaxia was a very polite and sociable person, capable to handle a research and reaching conclusions. All the above in corporation to her strong intention to study and research further inspire her students and her colleagues as well.

**23<sup>rd</sup> ANNUAL SYMPOSIUM OF THE HELLENIC NUCLEAR PHYSICS SOCIETY**  
**Jun 20 – 21, 2014, Aristotle University of Thessaloniki, Greece**  
**(HNPS-2014)**

**Symposium programme**

**Friday 20 June 2014**

**SESSION I**

**Chair: T. Kosmas UOI**

- 09:00 – 09:10 Introductory presentation of Dr. K. Langanke  
*T. Kosmas UOI*
- 09:10 – 09:40 Opportunities at the Facility for Antiproton and Ion Research in GSI Darmstadt (*invited talk*)  
*K. Langanke GSI*
- 09:40 – 10:00 Nuclear physics at the Institute of Physics of SASc in Bratislava (*invited talk*)  
*M. Veselsky ASB*
- 10:00 – 10:30 CALIBRA: A Research Infrastructure proposal for the National Roadmap (*invited talk*)  
*S. Harissopoulos NCSR*

**SESSION II**

**Chair : S. Harissopoulos NCSR**

- 11:00 – 11:20 Super Heavy Elements –SHE  
*M. Zamani – Valasiadou AUTH*
- 11:20 – 11:35 Measurement of the  $^{237}\text{Np}(n,f)$  cross section with the FIC detector at the CERN n\_TOF facility  
*M. Diakaki NTUA*
- 11:35 – 11:50 Measurement of the  $^{242}\text{Pu}(n,f)$  cross-section at the CERN n\_TOF facility  
*A. Tsinganis NTUA*
- 11:50 – 12:05 Microscopic Calculations of Low and Medium Energy Fission with the CoMD Model  
*N. Vonta UOA*
- 12:05 – 12:20 Analysis of neutron streaming through penetrations in the JET biological shielding  
*I.E. Stamatelatos NCSR*
- 12:20 – 12:35 Study of the  $^{10}\text{B}(p,\alpha\gamma)^7\text{Be}$  and  $^{10}\text{B}(p,p'\gamma)^{10}\text{B}$  reactions for PIGE purposes  
*A. Lagoyannis NCSR*
- 12:35 – 12:50 Neutron reaction studies in the rare earth region: First results for the  $^{162}\text{Er}(n,2n)^{161}\text{Er}$  physics case  
*N. Patronis UOI*
- 12:50 – 13:05 Activation cross section for the  $(n,2n)$  reaction on  $^{197}\text{Au}$   
*A. Kalamara NTUA*
- 13:05 – 13:20 The benchmarking procedure: Implementation in the case of proton backscattering  
*V. Paneta NTUA*

**SESSION III**

**Convener: E. Florou NCSR**

- 15:00 – 15:30 POSTER SESSION  
Benchmarking the proton elastic cross sections on  $^{19}\text{F}$  and  $^{nat}\text{B}$  using  $\Delta E/E$  silicon telescopes  
*A. Stamatopoulos UOA*
- Study of the  $^{11}\text{B}(p,p'\gamma)^{11}\text{B}$  reaction for PIGE applications  
*K. Preketes-Sigalas NCSR*
- Rate Theory Analysis of Point Defect Migration in Irradiated Fe-Cr alloys  
*Z. Kotsina NCSR*
- Incorporation of Ion Post Stripper in the APAPES Experimental Setup  
*E.M. Asimakopoulou UOA*

Spectrum analysis using MCsimulations for *in situ*  $\gamma$ -ray measurements in the marine environment  
*E.G. Androulakaki NTUA*  
 HDA input lens voltages optimization using SIMION  
*A. Kanellakopoulos UOA*  
 A new  $\gamma$ -spectroscopy station at the University of Athens  
*V. Lagaki UOA*  
 Large Sample Neutron Activation Analysis of Ceramic Matrix Composites  
*I.E. Stamatelatos NCSR*  
 Adsorption of  $^{152}\text{Eu}$  from aqueous solutions using amorphous Titanium Phosphates  
*M. Kapnisti AUTH*  
 External dose due to natural radioactivity and  $^{137}\text{Cs}$  in marine organisms (RESRAD-BIOTA tool)  
*N. Marosi NTUA*  
 Natural radioactivity and  $^{137}\text{Cs}$  in marine sediments from Amvrakikos Gulf  
*H. Papaefthymiou UOP*  
 Validating Global Models Using the Fukushima Nuclear Power Plant Accident  
*N. Evageliou CEA/CNRS*

#### **SESSION IV**

15:30 – 15:45 **Chair: A. Clouvas AUTH**  
 Modelling the vertical distribution of  $^{137}\text{Cs}$  at the deep basins of the Aegean Sea  
*C. Tsabaris HCMR*  
 15:45 – 16:00 Simulation of radionuclides transfer in the terrestrial environment using dosimetry models  
*M. Sotiropoulou AUTH*  
 16:00 – 16:15 Use of natural and artificial radionuclides in marine sedimentology study of Shatt Al-Arab estuary  
*D.L. Patiris HCMR*  
 16:15 – 16:30 Sedimentation Rates from Four Different Aquatic Environments at NE Mediterranean  
*G. Eleftheriou NTUA*  
 16:30 – 16:45 Estimation of the environmental impact of phosphogypsum stockpile in Schistos waste site  
*F. Papageorgiou UOA*  
 16:45 – 17:00 Radiotoxic metals concentration measurement in sediments due to gold mining activities, Chalkidiki  
*F.K. Pappa NTUA*  
 17:15 – 17:30 Indoor radon in Greek workplaces  
*A. Clouvas AUTH*  
 17:30 – 17:45 In situ size distribution measurement of Radon decay products in thermal baths of Ikaria  
*M. Gini NCSR*  
 17:45 – 18:00 Localization and Identification of Gamma Ray Sources Using Pixelated CdTe Detectors  
*C. Potiriadis GAEC*

#### **Saturday 21 June 2014**

#### **SESSION V**

09:00 – 09:15 **Chair: K. Langanke GSI**  
 Neutron star structure and collective excitations of finite nuclei  
*C. Moustakidis AUTH*  
 09:15 – 09:30 Symmetry energy effects on isovector properties of neutron rich nuclei with Thomas-Fermi approach  
*M.C. Papazoglou AUTH*  
 09:30 – 09:45 Nuclear study of the exotic neutrino interactions  
*D.K. Papoulias UOI*  
 09:45 – 10:00 The role of  $e^-$ -capture in neutrino-nucleosynthesis  
*P.G. Giannaka UOI*  
 10:00 – 10:15 The response of an autonomous underwater telescope to high energy  $\nu$  for the observation of GRBs  
*K. Valasi NCSR*  
 10:15 – 10:30 Systematic cross section measurements of  $(\alpha, \gamma)$  reactions for astrophysics  
*G. Provatas NCSR*



- 10:30 – 10:45 Proton capture reactions in medium-heavy nuclei relevant to p-process nucleosynthesis  
*V. Foteinou NCSR*
- 10:45 – 11:00 First cross-section measurements of the  $^{112}\text{Cd}(p,\gamma)^{113}\text{In}^*$  reaction at astrophysical energies  
*A. Psaltis UOA*

**SESSION VI** **Chair: I. Stamatelatos NCSR**

- 11:30 – 11:45 Use of everyday materials in retrospective nuclear accident dosimetry  
*K.C. Stamoulis UOI*
- 11:45 – 12:00 Use of the OSL Dating and X-Ray Fluorescence Spectrometry Methods as Tools in Paleoseismology  
*I.M. Tsodoulos UOI*
- 12:00 – 12:15 Measurements and Monte Carlo simulations of neutron production at a medical accelerator  
*E. Vagena AUTH*
- 12:15 – 12:30 A Compton Camera for Medical Applications  
*M. Zioga UOA*
- 12:30 – 12:45 Time Filtering and Image Detection Efficiency in the Time Resolved Optical Tomography  
*A.N. Raspomanikis UOA*
- 12:45 – 13:00 TETRA-SPECT: A Four-Head Rotating System for Mammography  
*A. Tsilimidou UOA*

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