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Chrysovalantis Constantinou

Education

2017 **Ph.D., Physics**, *University of Notre Dame*, Notre Dame, Indiana, USA
Thesis title: "Natural orbitals for the no-core configuration interaction approach" (M. A. Caprio, advisor)

2014 **M.S., Physics**, *University of Notre Dame*, Notre Dame, Indiana, USA

2009 **Diploma, School of Applied Mathematics and Physical Sciences**, *National Technical University of Athens*, Athens, Greece
Thesis title: "Characterization of the energetic profile of the neutron beam produced by $d(d,{}^3\mathrm{He})n$ reactions at the Athens Tandem Accelerator of the NCSR Demokritos" (M. Kokkoris, advisor)

Research and Professional Interests

Computational High-performance computing, Machine learning applications, Web application development, Game development, Finite-Difference Time-Domain (FDTD) method

Physics Nuclear structure, Group theoretical methods in nuclear physics, *Ab initio* nuclear theory, Computational methods for quantum many-body systems

Complexity Agent-based modelling, Complexity theory, Mobility simulations

Professional Appointments

2023–present **Associate Research Scientist**, *The Cyprus Institute*, Science and Technology in Archaeology and Culture Research Center (E. Nikita, T. Rehren, supervisors)

2023–2024 **Visiting Teacher of Physics (Part-time)**, *The International School Of Paphos*, Department of Science

2019–2023 **Computational Scientist**, *The Cyprus Institute*, Computation-based Science and Technology Research Center (C. Alexandrou, supervisor)

2017–2019 **Visiting Assistant Professor**, *Monmouth College*, Physics Department

2016–2017 **Postdoctoral Research Associate**, *Yale University*, Physics Department (F. Iachello, advisor)

2015–2016 **Graduate Research Assistant**, *University of Notre Dame*, Physics Department

2009–2015 **Graduate Teaching Assistant**, *University of Notre Dame*, Physics Department

Publications

Testing the accuracy of the SexEst software for sex estimation in a modern Greek sample - Paraskevi-Anna Nikita, Nefeli Garoufi, Eustratios Valakos, Ch. Constantinou, Efthymia Nikita, Maria-Eleni Chovalopoulou, International Journal of Osteoarchaeology, e3283, (2024)

AgeEst: An open access web application for skeletal age estimation employing machine learning - Ch. Constantinou, M.E. Chovalopoulou, E. Nikita, Forensic Science International: Reports 7, 100317 (2023)

Natural orbitals for the ab initio no-core configuration interaction approach - P. J. Fasano, Ch. Constantinou, M. A. Caprio, J. P. Vary, P. Maris, Phys. Rev. C 105, 054301 (2022)

SexEst: An open access web application for metric skeletal sex estimation - Ch. Constantinou, E. Nikita, International Journal of Osteoarchaeology, 32(4), 832 – 844 (2022)

Natural orbital description of the halo nucleus $^{6}\mathrm{He}$ - Ch. Constantinou, M. A. Caprio, J. P. Vary, P. Maris, Nucl. Sci. Tec. 28, 179 (2017)

Generalized seniority with realistic interactions in open-shell nuclei - M. A. Caprio, F. Q. Luo, K. Cai, Ch. Constantinou, and V. Hellemans, J. Phys. G 39, 105108 (2012)

Generalized seniority for the shell model with realistic interactions - M. A. Caprio, F.Q. Luo, K. Cai, V. Hellermans, Ch. Constantinou, Phys. Rev. C 85, 034324 (2012)

Characterization of the neutron flux distribution at the Athens Tandem Accelerator NCSR Demokritos - R. Vlastou, M. Kokkoris, M. Diakaki, Ch. Constantinou, C.A. Kalfas, A. Kotrotsou, A. Lagoyannis, M. Lambrou, V. Loizou, E. Mara, V. Paneta, G. Provatas, A. Tsinganis, Nucl. Instr. Meth. Phys. Res. B269, 3266 (2011)

Conference Proceedings

Generalized seniority in a major shell with realistic interactions - M. A. Caprio, F. Q. Luo, K. Cai, Ch. Constantinou, and V. Hellemans, in Beauty in Physics: Theory and Experiment, ed. R. Bijker et al., AIP Conf. Proc. No. 1488 (AIP, Melville, New York, 2012), p. 212

Talks

Linking Ancient Cities: Network Analysis of the Roman Transportation System - American Physical Society April Meeting, Sacramento & Virtual, California, April 2024

NI4OS-Europe via an example service: SexEst - Hungarian Open Science Forum, Virtual, Hungary, October 2022

Open access web application for metric skeletal sex estimation - EOSC Regional Event, Budapest, Hungary, September 2022

FAIR data and FAIR principles - NI4OS-Europe End-Users training event, Nicosia, Cyprus, June 2022

Deploying machine learning models for forensic anthropological applications with Docker and Streamlit - DockerCon 2022, Virtual, USA, May 2022

Open science and FAIR principles - NI4OS-Europe capacity-building event, Nicosia, Cyprus, October 2020

Natural orbitals for the no-core configuration interaction approach - Workshop on *ab initio* nuclear theory, Ames, Iowa, December 2017

Cluster orbitals for the mirror nuclei $^{7}\mathrm{Li}$ and $^{7}\mathrm{Be}$ - Division of Nuclear Physics Meeting, Pittsburgh, Pennsylvania, October 2017

Ab initio no-core configuration interaction calculations of electromagnetic observables for p-shell nuclei - Division of Nuclear Physics Meeting, Vancouver, British Columbia, Canada, October 2016

Accelerating the convergence of no-core configuration interaction calculations using natural orbitals - Midwest Theory Get-Together, Argonne National Laboratory, Chicago, Illinois, September 2016

Ab initio no-core configuration interaction calculations in the natural orbital basis - Division of Nuclear Physics Meeting, Santa Fe, New Mexico, October 2015

The natural orbital basis for no-core configuration interaction calculations - Midwest Theory Get-Together, Argonne National Laboratory, Chicago, Illinois, September 2015

Scaling properties for no-core configuration interaction calculations using the harmonic oscillator basis and the JISP16 interaction - American Physical Society April Meeting, Savannah, Georgia, April 2014

Professional Activities

2023– Reviewer: PLOS ONE

Management and Administration

2019–2023 **National Initiatives for Open Science in Europe**, *Work Package 6 co-leader*
Organized workshops, prepared project deliverables, supported researchers in on-boarding their services to NI4OS-Europe, disseminated Open Science and FAIR principles through international talks and training materials, and assisted with online service on-boarding. The project received positive reviews from European Committee representatives

Military Service

2001–2003 Cypriot National Guard, Sergeant, Army Corps

Teaching

Spring 2024 **AS Level Physics, A Level Physics**, *International School of Paphos*, Paphos, Cyprus

Fall 2023 **AS Level Physics, A Level Physics**, *International School of Paphos*, Paphos, Cyprus

Spring 2019 **Advanced Electromagnetism**, *Monmouth College*, Monmouth, Illinois

Spring 2019 **Introductory Physics II**, *Monmouth College*, Monmouth, Illinois

Fall 2018 **Introductory Physics I**, *Monmouth College*, Monmouth, Illinois

Fall 2018 **Classical Mechanics**, *Monmouth College*, Monmouth, Illinois

Fall 2018 **Mathematical Methods for Physicists**, *Monmouth College*, Monmouth, Illinois

Summer 2016 **Review of Fundamental Physics II**, *University of Notre Dame*, Notre Dame, Indiana

Outreach

June 2017 **Nuclear physics: The strong many-body problem**, *Yale Young Scholars Showcase Program*, New Haven, Connecticut

Awards

2003 **State Scholarship Foundation of Greece**, *National Technical University of Athens*, Athens, Greece
Recognized for achieving the highest score in the entrance examinations for the School of Applied Mathematics and Physical Sciences

Programming

Languages	`C/C++`, `Python`
Web	`JavaScript`, `HTML`, `CSS`, `NPM`
Systems	`Linux`, `Windows`, `OS X`
Technologies	`Docker`, `Git`
Simulation	`NetLogo`
Packages	`Mathematica`, `MATLAB`
Game Development	`Unity3D`

Languages

Greek	Fluent (Native)
English	Fluent
French	Basic

Professional Affiliations

American Physical Society

Division of Nuclear Physics of the American Physical Society

References

Prof. Efthymia Nikita — e.nikita@cyi.ac.cy

Prof. Georgios Artopoulos — g.artopoulos@cyi.ac.cy

Prof. Mark A. Caprio — mcaprio@nd.edu

Interests

Soccer, Boxing, Reading, Billiards, Running