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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"
Advisor: Professor Mark A. Caprio
- 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 $d(d, {}^3\text{He})n$ reactions at the Athens Tandem Accelerator of the NCSR Demokritos"
Advisor: Professor Michael Kokkoris

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

Professional Appointments

- 2023–present **Visiting Teacher of Physics (Part-time)**, *The International School Of Paphos*, Department of Science
- 2023–present **Associate Research Scientist**, *The Cyprus Institute*, Science and Technology in Archaeology and Culture Research Center
- 2019–2023 **Computational Scientist**, *The Cyprus Institute*, Computation-based Science and Technology Research Center
- 2017–2019 **Visiting Assistant Professor**, *Monmouth College*, Physics Department
- 2016–2017 **Postdoctoral Research Associate**, *Yale University*, Physics Department
- 2015–2016 **Graduate Research Assistant**, *University of Notre Dame*, Physics Department
- 2009–2015 **Graduate Teaching Assistant**, *University of Notre Dame*, Physics Department

Publications

Identifying mobility hubs across the Roman transportation system: a network analysis - Chrysovalantis Constantinou, Efthymia Nikita, Ruben Post, Network Science, (submitted)

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, (submitted)

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 ${}^6\text{He}$ - 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. Hellemans, 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

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 ${}^7\text{Li}$ and ${}^7\text{Be}$ - 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

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

Fall 2023 **AS/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

Languages

Greek Fluent (Native)
English Fluent
French Basic

Professional Affiliations

American Physical Society
Division of Nuclear Physics of the American Physical Society

References

Prof. e.nikita@cyi.ac.cy
Efthymia Nikita
Prof. g.artopoulos@cyi.ac.cy
Georgios Artopoulos

Prof. Mark A. mcaprio@nd.edu
Caprio

Interests

Soccer, Boxing, Reading, Billiards, Running