Chrysovalantis Constantinou

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Education

- **Ph.D., Physics, 2017**
  M.S., Physics, 2013
  University of Notre Dame, Notre Dame, Indiana, USA
  Thesis title: *"Natural orbitals for the no-core configuration interaction approach"*
  Advisor: Professor Mark A. Caprio
- **Diploma, School of Applied Mathematics and Physical Sciences, 2009**
  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"*
  Advisor: Professor Michael Kokkoris

Research and Professional Interests

High-performance computing. Machine learning applications. Agent-based modelling. Web application development. Game development. Nuclear structure. Group theoretical methods in nuclear physics. *Ab initio* nuclear theory. Computational methods for quantum many-body systems.

Professional Appointments

- 2023-present, The Cyprus Institute, Associate Research Scientist, Science and Technology in Archaeology and Culture Research Center
- 2019-2023, The Cyprus Institute, Computational Scientist, Computation-based Science and Technology Research Center
- 2017-2019, Monmouth College, Visiting Assistant Professor, Physics Department
- 2016-2017, Yale University, Postdoctoral Research Associate, Physics Department
- 2015-2016, University of Notre Dame, Graduate Research Assistant, Physics Department
- 2009-2015, University of Notre Dame, Graduate Teaching Assistant, Physics Department

Management and Administration

- 2019-present, National Initiatives for Open Science in Europe, Work Package 6 co-leader
  - Tasks include: Organization of workshops, writing project deliverables, providing help and support to researchers that want to have their services on-boarded to NI4OS-Europe, disseminating the Open Science and FAIR principles to the local and international communities by giving talks in international conferences and preparing training materials, helping with the on-boarding of services on-line

Military Service

- 2001-2003, Cypriot National Guard, Sergeant, Army Corps

Publications

- **AgeEst: An open access web application for skeletal age estimation employing machine learning**
  Ch. Constantinou, M.E. Chovalopoulou, E. Nikita, Forensic Science International **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}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

- **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}Li and ^{7}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

Teaching

- **PHYS 77031: Review of Fundamental Physics II**
  Notre Dame, Indiana, Summer Session 2016
- **PHYS 130: Introductory Physics I**
  Monmouth, Illinois, Fall Semester 2018
- **PHYS 132: Introductory Physics II**
  Monmouth, Illinois, Spring Semester 2018, 2019
- **PHYS 208: Classical Mechanics**
  Monmouth, Illinois, Fall Semester 2018
- **PHYS 303: Advanced Electromagnetism**
  Monmouth, Illinois, Spring Semester 2018, 2019
- **PHYS 311: Mathematical Methods for Physicists**
  Monmouth, Illinois, Fall Semester 2018

Outreach

- **Nuclear physics: The strong many-body problem**
  The talk was given to the Yale young scholars showcase program, New Haven, Connecticut, June 2017

Awards

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

Programming

- Languages: `C/C++`, `python`
- Web Skills: `JavaScript`, `HTML`, `CSS`, `npm`
- Operating Systems: `Linux`, `Windows`, `OS X`
- Technologies: `Docker`, `Git`, `NetLogo`
- Mathematical Packages: `Mathematica`, `MATLAB`

Languages

- Native language: **Greek**
- Full professional proficiency: **English**
- Limited proficiency: **French**

Professional Affiliations

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

References

- Prof. Mark A. Caprio (`mcaprio@nd.edu`)
- Prof. Christopher Fasano (`cfasano@monmouthcollege.edu`)
- Prof. James Vary (`jvary@iastate.edu`)

Interests

- Soccer, Boxing, Reading, Billiards, Running