Chrysovalantis Constantinou

Research Profile

Interdisciplinary nuclear physicist with experience in *ab initio* nuclear theory, machine learning, and scientific software development. My research spans nuclear structure and computational many-body methods, medical imaging AI, and forensic anthropology. I have contributed to projects across fundamental physics, applied machine learning, and open-science initiatives.

Research Interests

Ab initio nuclear theory; nuclear structure; computational many-body methods; algebraic and group-theoretical methods; machine learning applications in physics and osteoarchaeology; medical imaging AI; forensic anthropology and osteoarchaeology; scientific software and web-based research tools; high-performance computing

Academic and Research Appointments

Independent Researcher	2025–present
Visiting Researcher, Université Libre de Bruxelles	May–June 2025
Postdoctoral Research Fellow, The Cyprus Institute (CaSToRC)	Sept–Nov 2024
Associate Research Scientist, The Cyprus Institute (STARC)	Jan 2023–Aug 2024
Computational Scientist, The Cyprus Institute (CaSToRC)	Oct 2019–Dec 2022
Visiting Assistant Professor of Physics, Monmouth College	Jan 2018–Sept 2019
Postdoctoral Research Associate, Yale University	Oct 2016–Dec 2017

Education

Ph.D. in Physics, University of Notre Dame, USA

   Thesis: *Natural orbitals for the no-core configuration interaction approach*

M.S. in Physics, University of Notre Dame, USA

Diploma in Applied Mathematics and Physical Sciences, National Technical University of Athens, Greece

Selected Publications

Classifying Legal Age of Majority (≥18 years) from Panoramic Radiographs with Transfer Learning: Benchmarking ViT and EfficientNetV2. *Journal of Forensic and Legal Medicine*, under review (3rd major revision), 2025.

Skeletal Sex Estimation for Human Remains from Archaeological Contexts. *International Journal of Osteoarchaeology*, 2025.

AgeEst: An open access web application for skeletal age estimation employing machine learning. *Forensic Science International: Reports*, 2023.

Natural orbitals for the *ab initio* no-core configuration interaction approach. *Physical Review C*, 2022.

SexEst: An open access web application for metric skeletal sex estimation. *International Journal of Osteoarchaeology*, 2022.

Full publication list available upon request.

Selected Talks

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

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

Open access web application for metric skeletal sex estimation. EOSC Regional Event, Budapest, 2022.

Deploying machine learning models for forensic anthropological applications. DockerCon, Virtual, 2022.

Full list of invited and conference talks available upon request.

Teaching Experience

Advanced Electromagnetism; Classical Mechanics; Mathematical Methods for Physicists; Introductory Physics I–II; Review of Fundamental Physics II; AS and A-Level Physics.

Professional Service

Reviewer for *PLOS ONE* and *IEEE Journal of Biomedical and Health Informatics*.

Co-lead, NI4OS-Europe Work Package on Open Science and FAIR data.

Technical Skills

Programming: Python, C/C++, MATLAB, Mathematica, JavaScript

Machine Learning & Data: PyTorch, XGBoost, scikit-learn, pandas

Web & Deployment: Docker, Streamlit, Dash/Plotly, React, Three.js

Systems: Linux, shell scripting, macOS

References

Available upon request.