Ioannis **Nikiteas**

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Education

Ph.D. in Nuclear Physics & Computational System Modelling — *London, UK*

Imperial College London — *Oct. 2018 - PRESENT*

- Investigating global and goal based error metrics for space-angle adaptive refinement of nuclear simulations

M.Sc. in Advanced Nuclear Engineering — *London, UK*

Imperial College London — *Sept.2017 - Sept.2018*

- Thesis on Load balancing for adaptive radiation transport simulations

B.Sc. in Experimental Physics — *Egham, UK*

Royal Holloway University of London — *Sept. 2014 - May. 2017*

- Graduated with 1st Class Honours
- Obtained fundamental skills for analysing and solving problems in the fields of Physics and Mathematics
- Dissertation title: Investigating the transition from Molecular Dynamics to Smoothed Particle Hydrodynamics

International Baccalaureate Diploma — *Athens, Greece*

The Moraitis School — *2012 - 2014*

- Overall Score 34/45 with; Physics HL: 7/7, Math HL: 6/7, Chemistry SL: 5/7

Awards & Scholarships

Scholarships

2017 **Alexander S. Onassis Public Benefit Foundation,** Scholarship for academic excellence £13,000 — *Athens, Greece*

Publications

I. Nikiteas and D. M. Heyes. "Bounded inverse power potentials: Isomorphism and isosbestic points." *Journal of Chemical Physics*, **volume 150**(14), pp. 144504 (2019).

I. Nikiteas and S. Dargaville and C.C. Pain and P.N. Smith and R.P. Smedley-Stevenson. "Impact of load balancing on parallel performance with Haar wavelets angular adaptivity." *American Nuclear Society Nuclear Science and Engineering*, *unpublished* (2019).

I.Nikiteas and S. Dargaville and P.N. Smith and C.C Pain. "Load balancing angular adaptivity on energy dependent reactor problems." *PHYSOR 2020 Conference proceedings*, (2019).

I. Nikiteas and D. M. Heyes "Reentrant melting and multiple occupancy crystals of bounded potentials: simple theory and direct observation by Molecular Dynamics Simulations." *Physical Review E*, **accepted** (2020).

Projects

Load balancing for adaptive radiation transport simulations — *London, UK*

M.Sc. Thesis — *Feb. 2018 - PRESENT*

- Study and outline the use cases between FDM, FEM, FVM, DGFEM, S_n, P_n and wavelets.
- Understand the functionality of different linear iterative solvers: Jacobi, Gauss-Seidel and Symmetric Successive Over Relaxation.
- Study the application of global and goal based adaptive methods on transport problems.
- Benchmark, improve and optimise existing code for load balancing of radiation transport problems.

Investigating the transition from Molecular Dynamics to Smoothed Particle Hydrodynamics

Egham, UK

B.Sc. Dissertation — *Sept. 2016 - Apr. 2017*

- Investigated the existence of a continuous transition between Molecular Dynamics (MD) and Smooth Particle Hydrodynamics (SPH) by creating computer simulations in C++ and performing data analysis in Python.
- Used an only repulsive pair potential to simulate a fluid with periodic boundary conditions.
- Parameters of the pair potential were altered resulting into a weakening of the interatomic forces and "softening" of the force distribution of the fluid.
- Using principals of statistical mechanics such as Radial Distribution Functions (RDF), Velocity Autocorrelation Functions (VAF) and Mean Square Displacement (MSD), quantitative observations were made for the transition limits between the two models (MD and SPH).
- It was deduced that there exists a continuous transition between MD and SPH for a small range of parameters of the pair potential. Weak pair potentials force the particles into clusters with infinitely small separation distances. For very weak potentials, the fluid could be accurately approximated by an ideal gas. The SPH limit could be approximated but never fully obtain a uniform distribution of forces between the particles, due to physical limitations of the potential (compared to Lucy or Monaghan potentials).

Nuclear Fusion: Stellarators and the Wendelstein 7-x Fusion Reactor

Egham, UK

Review Article for Fusion - PH3040 Energy — *Apr. 2017*

- Provided a historical overview of the nuclear fusion reactor designs.
- Discussed the physical theory to achieve a nuclear fusion reaction and the conditions required to sustain it.
- Outlined the benefits of using stellarator designs, like W 7-X, to achieve continuous fusion.

How does the damping due to eddy currents depend on the thickness and the number of slits of an aluminium plate

Athens, Greece

Extended Essay in Physics — *Jul.2013 - Mar. 2014*

- Investigated the damping of an oscillating pendulum with an aluminium plate attached to its end within a magnetic field.
- Performed a number of experiments with different plates varying thickness and laminations.
- Calculated the damping coefficients and confirmed the theoretical results derived.
- Concluded based on findings about the most energy efficient plate design.

Experience

Intern, Maintenance of Alumina, Non-Invasive Testing Methods

Viotia, Greece

Aluminium of Greece — *July. 2016 - Aug. 2016*

- Was part of a team responsible for the optimisation and maintenance of equipment used in the production of aluminium oxide (alumina).
- Was familiarised with methods and techniques used to investigate for structural failures in industrial equipment.
- Performed non-destructive testing (e.g. Ultrasonic testing, liquid penetrant, eddy-current testing, remote visual inspection).
- Gained experience on the modus operandi of an energy power plant.

Private Tutor

Egham, UK

Self-Employment — *Oct. 2015 - Nov. 2015*

- Organised study tutorials and provided assistance with calculus and statistics for 1st year economics students from Bocconi University.

Gallery with... ELPIDA (Hope)

Athens, Greece

Non-profit organisation — *May. 2012*

- Organised, with two more individuals, a 3-day art gallery focused on charity, with the aid of *Piraeus Bank Group Cultural Foundation* and *Association of Friends and Children with Cancer "ELPIDA"*.
- Intent of the gallery, was to promote hope and give back to people who were in need during times of hardship.
- 152 art pieces from the 1st workshop of Athens's Art School, were displayed, in Moraitis School, raising a total of €75,000.
- The profits were used for two purposes:
  - Support the noble cause of the *Association of Friends and Children with Cancer "ELPIDA"* and its president's Marianna V. Vardinoyannis.
  - Contribute in the combat of youth unemployment by employing and promoting young artists.

Skills and Inerests

Programming	Python, C/C++, Fortran, Git, Bash, DOS-Batch, Wolfram Language
Other Software	LaTeX, Microsoft Office, Inkscape, GIMP, Logger Pro 3
Languages	English, Greek, French
People	Communication, Leadership, Multidisciplinary Teamwork, Organisation
Laboratory	Risk assessment, Report writing, Experimental design
Interests	Coding, Chess, Trading (Algorithmic trading), Politics.