

NIKOLAOS KYRIAZIS

Flat 4, 235 Camden Road, London, N7 0HR, UK
+447787144272 ◊ nick.kyriazhs@gmail.com

EDUCATION

- City, University of London, UK** October 2015 - December 2018
Ph.D. in Mechanical Engineering
Thesis Title: Simulation of cavitation using compressible flow solvers.
- Embry-Riddle Aeronautical University, Daytona Beach, FL, US** January 2013 - December 2014
Master of Science in Aerospace Engineering
Thesis Title: A continuous/discontinuous FE method for the 3-D incompressible flow equations.
Overall GPA: 3.71/4.0
- University of Patras, Greece** September 2006 - December 2011
Five year Diploma in Mechanical & Aerospace Engineering
Thesis Title: Numerical solution of the linear convection-diffusion equations using discontinuous Galerkin method.
Overall GPA: 8.02/10.0

WORK EXPERIENCE

- International Institute for Cavitation Research, City, University of London** October 2015 - present
First Stage Researcher in MSCA-ITN-ETN H2020 CaFE project (<http://cafe-project.eu/>) London, UK
- Implementation and development of compressible multiphase algorithms for predicting cavitation in OpenFOAM. The above CFD analysis software has been employed for automotive (Diesel injectors) and biomedical applications (drug delivery) among others.
 - Real fluid thermodynamics have been incorporated in the solver.
 - Programming of an in-house CFD tool using the OpenMP interface for fundamental studies.
- City, University of London** October 2017 - present
Grader, Tutor London, UK
- Tutorial grading and tutoring in thermodynamics and fluid mechanics courses.
- Technical University of Munich** October 2016 - December 2016
Visiting Researcher Munich, Germany
- Development of a 3-phase solver in OpenFOAM.
- Wind tunnel lab, Embry-Riddle Aeronautical University** January 2013 - December 2014
Teaching Assistant Daytona Beach, FL, US
- Supervision of wind tunnel experiments and teaching in the Experimental Aerodynamics Lab.
- National Technical University of Athens (NTUA)** December 2012 - December 2013
Research Assistant in Research Funding Program THALES Athens, Attica, Greece
- Numerical implementation and development of a 3-D incompressible flow solver by employing a novel Finite Element discretization.
 - Parallel programming on multiprocessor platforms using the MPI protocol. The linear and non-linear systems have been numerically solved by the use of PETSc library.
- Foundation for Research and Technology Hellas (FORTH)** November 2011 - November 2012
Research Assistant Heraklion, Crete, Greece
- Created a parallel, high order scheme for the 3-D compressible RANS equations in the discontinuous Galerkin framework. The Spalart-Allmaras turbulence model was utilized for both benchmark cases and 3-D simulations.
 - Developed a parallel algorithm for the unsteady 3-D linear elasticity equations in the continuous Galerkin framework. The code was validated against several benchmark problems.

PROJECT EXPERIENCE

Diesel injector Simulation: Modelling of the flow inside an injector operating at high pressures. RANS and LES model were utilized and cavitation areas were identified (CFD analysis in OpenFOAM, post-processing in ParaView).

Wind Turbine Simulation: Numerical investigation of the flow around a wind turbine was performed, either using moving reference frame or moving mesh approximations (grid generation in Pointwise, CFD analysis in Ansys Fluent, post-processing in Tecplot).

Aerodynamic Evaluation of a 3-D Orbiter: Simulation during supersonic flight was conducted in order to determine the angle of attack for maximum glide slope (grid generation in Pointwise, CFD analysis in Ansys Fluent, post-processing in Tecplot).

SKILLS

Programming	C, C++, Python, Fortran, MPI, OpenMP
Operating Systems	MS Windows, Unix/Linux
Tools	Pointwise, Gambit, ANSYS Fluent, OpenFOAM, Tecplot, ANSYS CFD-Post, ParaView, LaTeX, MS Office, Git
Languages	English (full professional proficiency), German (basic), Greek (mother tongue)

JOURNAL PUBLICATIONS

E. Stavropoulos Vasilakis, **N. Kyriazis**, P. Koukouvinis, M. Farhat, M. Gavaises, Cavitation induction by projectile impacting on a water jet, *Int. J. Multiphase Flow*, under review.

N. Kyriazis, P. Koukouvinis and M. Gavaises, Numerical Investigations on bubble-induced jetting and shock wave focusing: application on a needle-free injection, *Proc. R. Soc. Lond. A*, under revision.

P. Koukouvinis, **N. Kyriazis** and M. Gavaises, Smoothed particle hydrodynamics simulation of a laser pulse impact onto a liquid metal droplet, *PLoS ONE*, 13 (9) (2018) 1-13. doi:<https://doi.org/10.1371/journal.pone.0204125>.

N. Kyriazis, P. Koukouvinis and M. Gavaises, Modelling cavitation during droplet impact on solid surfaces, *Adv. Colloid Interface Sci.*, 260 (2018) 46-64. doi:<https://doi.org/10.1016/j.cis.2018.08.004>.

N. Kyriazis, P. Koukouvinis and M. Gavaises, Numerical Investigation of bubble dynamics using tabulated data, *Int. J. Multiphase Flow*, 93 (2017) 158-177. doi:[10.1016/j.ijmultiphaseflow.2017.04.004](https://doi.org/10.1016/j.ijmultiphaseflow.2017.04.004).

CONFERENCE PUBLICATIONS

N. Kyriazis, P. Koukouvinis, I. Karathanassis and M. Gavaises, A tabulated data technique for cryogenic two-phase flows, *ECFD2018*, Glasgow, UK, June 2018.

N. Kyriazis, P. Koukouvinis, M. Gavaises, R. Pearson and M. Gold, Heating effects during bubble collapse using tabulated data, *CAV2018*, Baltimore, US, May 2018.

N. Kyriazis and J. Ekaterinaris, A mixed continuous/discontinuous finite element discretization of the incompressible NS equations, *AIAA Paper 2015-0821*, 53rd AIAA Aerospace Science Meeting, Kissimmee, FL, 2015.

N. Kyriazis, A. Papoutsakis, K. Panourgias and J. Ekaterinaris, Numerical investigation of the effect of turbulence modeling for flows with shocks and vortical structures, *AIAA Paper 2013-0406*, 51st AIAA Aerospace Science Meeting, Grapevine, TX, 2013.

OTHER

Presentations	IICR 2017 Workshop (Chania, Greece), PDESoft 2016 Workshop (Warwick, UK)
Journal referee	Physics of Fluids
Memberships	Technical Chamber of Greece, AIAA
References	Available upon request