

MANUEL A. DÍAZ

Rue de Namur 95D ◊ 1400 Nivelles, Belgium

(+32) · 0496 · 52 · 20 · 62 ◊ www.github.com/wme7 ◊ manuel.ade@gmail.com

Cenaero ASBL, Eole Building, Rue des Frères Wright, 29, 6041 Gosselies, Belgium

EDUCATION

-
- **Ph.D. in Applied Mechanics** 2012-2015
National Taiwan University (NTU), Taiwan, GPA: 3.85/4.3
Dissertation: Modeling Rarefied Gas Flows of Arbitrary Statistics with the Semiclassical Boltzmann-BGK Equation.
 - **M.S. in Applied Mechanics** 2010-2011
National Taiwan University (NTU), Taiwan, GPA: 3.93/4.2
Degree qualifying for Ph.D. admission. February 10, 2012.
 - **Chinese Language Studies** 2009-2010
National Taiwan Normal University (NTNU), Taiwan, Level B1
Mandarin Training Center
 - **B.S. in Mechanical Engineering** 2003-2008
Universidad Centroamericana “José Simeón Cañas” (UCA), El Salvador, GPA: 8.23/10.0
Dissertation: Design of a Banki Water Wheel Turbine.
 - **Technical High School Diploma in Mechanics** 2000-2002
Instituto Técnico Ricaldone (ITR), El Salvador, GPA: 9.2/10
Mechanical technology and manufacturing of machine components.

QUALIFICATIONS

Qualification for Associate Professor (Maître de Conférences), Section 60 02/02/2022

- Qualification No.: 22260373649

RESEARCH EXPERIENCE

Senior Research Engineer, CDI 11/2022 to 03/2026
Cenaero ASBL *Gosselies, Belgium*

- Contributed to several projects of the Wallon Region, namely:
 - WINGS-II: Developed a GPU-accelerated version of FIDELIO using CUDA C++ and HIP directives.
 - MaiSoVI: Developed a GPU-accelerated solver for rarefied gas flows using CUDA C++.
 - VirtualLab: Assessed python-based GPU-accelerated libraries for building and using particle solvers in mechanical engineering applications.

Postdoctoral Researcher, ANR MAMIES, CDD 01/2022 to 10/2022
Institut Pprime — University of Poitiers *Poitiers, France*

- Worked as an experimental–computational researcher to develop a time-reversal aeroacoustic technique for the MAMIES project (2020–2022) (Project lead: Vincent Valeau).

Postdoctoral Researcher, NAE Project, CDD 10/2020 to 12/2021
ISAE ENSMA — Institut Pprime *Poitiers, France*

- Developed high-order immersed boundary methods (IBM) for aeroacoustics within a project supported by the CPER/FEDER 2015–2020 Transport program (Project leads: Véronique Fortuné and David Marx).

⁰CDI: Contrat à Durée Indéterminée (Permanent Contract), CDD: Contrat à Durée Déterminée (Fixed-term Contract)

Postdoctoral Researcher, ANR MAMIES, CDD

03/2019 to 09/2020

*Institut Jean Le Rond d'Alembert — Sorbonne University**Paris, France*

- Worked as a computational fluid dynamics (CFD) specialist developing algorithms for computational aeroacoustics (CAA) models (Project leads: Régis Marchiano and Vincent Valeau).

Postdoctoral Researcher, NSC Project, CDD

01/2016 to 12/2018

*Institute of Biomedical Engineering and Nanomedicine, NHRI**Zhunan, Taiwan*

- Worked as a CFD specialist developing algorithms to model highly nonlinear acoustic propagation using CUDA C. Gained experience in high-performance computing (HPC) techniques including MPI and OpenMP for multi-GPU numerical solvers (Project lead: Maxim Solovchuk).

TEACHING EXPERIENCE

LaTeX Instructor

2021-2022

*Tecnológico Nacional de México**Mexico City, Mexico*

- Taught a 16-hour online certification program: 8 hours on Beamer presentations and 8 hours on LaTeX document management for thesis writing. Reference: Hugo A. Carrillo.

Fluid Mechanics Lab Instructor

2020-2021

*ENSIP — University of Poitiers**Poitiers, France*

- Taught 24 hours/year of fluid mechanics laboratory sessions for first-year engineering students. Covered basic measurement techniques (pressure, flow rate, viscosity, head losses, etc.). Reference: F. Margnat.

Teaching Assistant - Nanoscale Energy Transport

2014-2015

*Institute of Applied Mechanics, NTU**Taipei, Taiwan*

- Supervised 18 hours of problem-solving sessions under Prof. Jaw-Yen Yang. Developed exercises on heat transfer and ideal plasma hydrodynamics. Reference: Jaw-Yen Yang.

INDUSTRY EXPERIENCE

Junior Mechanical Designer, CDI

08/2008 to 07/2009

*Ingendehsa S.A. de C.V.**San Salvador, El Salvador*

- Designed water valves, mechanical cranes, and pressurized pipelines for small and medium hydro-electric plants. Used AutoCAD and Autodesk Inventor for design drafts. Developed parameterized Inventor models linked with Excel calculations, facilitating collaboration across engineering teams.

TECHNICAL SKILLS

Languages

Spanish (Native), English (C2), Chinese (B1), French (A2).

Programming

Python 3, MATLAB, Mathematica, C/C++, Fortran, LaTeX, Git, Bash.

Libraries

CUDA, HIP/ROCm, MPI, MPI-IO, HDF5, OpenMP, PETSc.

Tools

Visual Studio Code, Vim, Emacs, Jupyter.

RESEARCH INTERESTS

- Computational fluid dynamics (CFD) and computational aeroacoustics (CAA)
- Thermoacoustics and nonlinear acoustics modeling
- Post-processing and optimization techniques for CFD:
 - Data assimilation · Time reversal · Adjoint methods · Gradient-based optimization
- Numerical methods:
 - Finite volume methods (FVM) and finite difference methods (FDM)
 - Finite element methods (FEM) and discontinuous Galerkin (DG) schemes

- Shock Capturing strategies and Essentially non-oscillatory (WENO) schemes.
- Software development for scientific computing on:
 - GPU accelerators using CUDA and HIP/ROCm,
 - Data visualization with OpenGL interoperability,

HONORS

- **2018**, Best Paper Presentation Award, National Health Research Institutes (NHRI)
Awarded at NHRI Research Day.
- **2014**, Engineering Faculty Fellowship, National Taiwan University (NTU)
Awarded to top Ph.D. students.
- **2011**, Best Individual Project, Institute of Applied Mechanics
Electronics course, Fall 2010.
- **2009**, Taiwan Scholarship Recipient, Ministry of Foreign Affairs of Taiwan
Awarded by Taiwanese Embassy in El Salvador.
- **2008**, Top Graduate in Mechanical Engineering, Salvadorian Association of Mechanical,
Electrical & Industrial Engineers.

REFERENCES

- *Thibaut VAN HOOFF*, `thibaut.vanhoof@cenaero.be`
- *Thomas TOURLORGE*, `thomas.toulorge@cenaero.be`
- *Vincent VALEAU*, `vincent.valeau@univ-poitiers.fr`
- *Véronique FORTUNÉ*, `veronique.fortune@univ-poitiers.fr`
- *David MARX*, `david.marx@univ-poitiers.fr`
- *Hugo A. CARRILLO*, `hugo.carrillo@rcarbonifera.tecnm.mx`
- *J.C. CHASSAING*, `jean-camille.chassaing@sorbonne-universite.fr`
- *Régis MARCHIANO*, `regis.marchiano@sorbonne-universite.fr`
- *Maxim SOLOVCHUK*, `solovchuk@nhri.org.tw`
- *Juan-Chen HUANG*, **co-author**, `jchuang@mail.ntou.edu.tw`
- *Min-Hung CHEN*, **co-author**, `mhchen@iam.ntu.edu.tw`
- *Jaw-Yen YANG*, **PhD director**, `yangjy@iam.ntu.edu.tw`
- *Yi-Ju CHOU*, **PhD co-director**, `yjchou@iam.ntu.edu.tw`
- *José LANDAVERDE*, **Ingendehsa**, `hlandaverde@navegante.com.sv`
- *Roberto CORDOVA*, `rcordova@uca.edu.sv`
- *Ismael SANCHEZ*, `isanchez@uca.edu.sv`

STATEMENT

I hereby certify that the information provided in this document is accurate.

*Manuel A. Díaz
April 12, 2026*