



Dario Abbondanza

Gender: Male

TEACHING AND RESEARCH ACTIVITIES

Postdoctoral researcher at Sapienza University of Rome

[04/2021 – Current]

Postdoctoral researcher in theoretical and computational fluid dynamics, fluid-structure interaction and multiphase flows.

Teaching assistant at Sapienza University of Rome

[03/2021 – 06/2022]

Teaching assistant for the course of Computational Aerodynamics Laboratory (Prof. Carlo Massimo Casciola). 2021 and 2022.

Teaching assistant at Sapienza University of Rome

[10/2019 – 01/2020]

Teaching assistant for the course of Analytical Mechanics (Prof. Daniele Andreucci)

Instructor at Temple University Rome Campus

[01/2020 – Current]

Instructor for the course ENGR 3571 - Classical and Statistical Thermodynamics.

Teaching assistant at Temple University Rome Campus

[01/2019 – 04/2019]

Teaching assistant for the course ENGR 3571 - Classical and Statistical Thermodynamics

Visiting postgraduate student at University of Glasgow

[09/2018 – 12/2018]

Developing structural mechanics code to simulate elastoplastic material behavior.

Supervisor: Dr. Andrew McBride

Co-advisor of multiple Master Thesis

EDUCATION AND TRAINING

Ph.D. in Theoretical and Applied Mechanics

Sapienza University of Rome [01/11/2017 – 31/12/2020]

https://phd.uniroma1.it/web/THEORETICAL-AND-APPLIED-MECHANICS_nD3520_EN.aspx

Field(s) of study: Computational and Theoretical Fluid Dynamics

Final grade : Cum laude

Thesis: Diffuse interface modelling of micro/nano cavitation bubbles and their interactions with elastoplastic walls

M.S. in Mechanical Engineering

Sapienza University of Rome [01/10/2015 – 30/10/2017]

Field(s) of study: Engineering, manufacturing and construction

Final grade : 110/110 cum laude

Thesis: A numerical model for the dynamics of macroscopic cavitation bubbles near solid boundaries

M.S. at Sapienza School for Advanced Studies (SSAS)

Sapienza University of Rome [01/11/2015 – 30/10/2017]

<https://web.uniroma1.it/ssas/en>

Final grade : 70/70 cum laude

Thesis: Fluid structure interaction: cavitation phenomena

B.S. in Mechanical Engineering

Sapienza University of Rome [01/10/2012 – 21/12/2015]

Field(s) of study: Engineering, manufacturing and construction

Final grade : 110/110 cum laude

Thesis: Functionally graded beams under the action of distributed loads and thermal gradients

B.S. at Sapienza School for Advanced Studies (SSAS)

Sapienza University of Rome [01/11/2012 – 30/10/2015]

<https://web.uniroma1.it/ssas/en>

Final grade : 70/70 cum laude

Thesis: An energetic model for the study of linear dynamics and eigenfrequencies of nano-beams

Diploma Liceo Classico

Liceo classico "Luciano Manara" [09/2007 – 06/2012]

Address: Rome (Italy)

Final grade : 98/100

INTERNATIONAL PROJECTS

Collaborator in the ERC Advanced Grant for the project BIC

Project **BIC** (Cavitation across scales: following Bubble from Inception to Collapse, agreement # 339446–BIC P.I. Prof. Carlo Massimo Casciola).

Collaborator in the ERC Proof-of-Concept (2017 call) project INVICTUS

Project **INVICTUS** (IN Vltro Cavitation Through UltraSound, proposal # 779751 P.I. Prof. Carlo Massimo Casciola).

PROJECTS

Iscra C Cineca

[01/05/2020 – 01/02/2021]

ACID - *Assessing Cavitation Induced Deformations* (P.I.).

Assigned budget: 80000 core hours on GALILEO supercomputer

Sapienza project

[27/10/2019 – 27/10/2020]

Avvio alla ricerca - *Numerical implementation of elasto-viscoplastic models with damage for the study of the strong interaction between a capillary fluid and a solid material.* (P.I. - 1200€ funding)

Iscra B Cineca

[19/08/2019 – 19/08/2020]

HET-NUCL (Collaborator)

Assigned budget: 1.5M core hours on GALILEO supercomputer

Iscra C Cineca

[06/12/2018 – 06/09/2019]

CESM - *Cavitation Effects on Solid Materials* (P.I.).

Assigned budget: 112500 core hours on MARCONI KNL supercomputer

PUBLICATIONS

Cavitation over solid surfaces: microbubble collapse, shock waves, and elastic response

[2022]

Abbondanza, D., Gallo, M., Casciola, C. M. Cavitation over solid surfaces: microbubble collapse, shock waves, and elastic response. *Meccanica* (To appear)

Vapor Nucleation in Metastable Liquids: the Continuum Description

[2022]

https://doi.org/10.1007/978-3-030-82992-6_12

Gallo, M., Magaletti, F., Abbondanza, D., & Casciola, C. M. (2022). Vapor Nucleation in Metastable Liquids: the Continuum Description. In *The Surface Wettability Effect on Phase Change* (pp. 343-385). Springer, Cham.

Modulated linear dynamics of nanobeams accounting for higher gradient effects

[2016]

<https://iris.uniroma1.it/handle/11573/1070674#.X9EjedhKiUk>

Abbondanza, Dario; Battista, Daniele; Morabito, Francescogiuseppe; Pallante, Chiara; Barretta, Raffaele; Luciano, Raimondo; de Sciarra, Francesco Marotti; Ruta, Giuseppe. - In: INTERNATIONAL JOURNAL OF ENGINEERING AND APPLIED SCIENCES. - ISSN 1309-0267. - ELETTRONICO. - 8:2(2016), pp. 1-20.

Linear dynamic response of nanobeams accounting for higher gradient effects.

[2016]

<https://iris.uniroma1.it/handle/11573/1272667#.X9EjM9hKiUk>

Abbondanza, Dario; Battista, Daniele; Morabito, Francescogiuseppe; Pallante, Chiara; Barretta, Raffaele; Luciano, Raimondo; de Sciarra, Francesco Marotti; Ruta, Giuseppe. - In: JOURNAL OF APPLIED AND COMPUTATIONAL MECHANICS. - ISSN 2383-4536. - 2:2(2016), pp. 54-64.

CONFERENCES AND SEMINARS

EFMC14 - 14th European Fluid Mechanics Conference (participant, speaker)

[Megaron Athens International Conference Centre, Athens, Greece, 13/09/2022 – 16/09/2022]

<https://www.efmc14.org/>

Artificial Intelligence: a glimpse of techniques, ethical issues & interaction with humanities (organizer)

[Online, 12/06/2020]

Workshop organized with the support of the **Institut français**, in the context of the **Cassini Project 2019** for Ph.D. students.

<https://sites.google.com/uniroma1.it/cassiniworkshop2020/home-page>

<https://www.youtube.com/watch?v=p6oSaSjTPME>

<https://www.youtube.com/watch?v=aBeisgvzIE>

CECAM - Challenges in Multiphase Flows (participant)

[Monash University, Prato Center, Tuscany, Italy, 09/12/2019 – 12/12/2019]

<https://users.monash.edu.au/~rprakash/cecam2019/home.html>

Sixth deal.II Users and Developers Workshop (participant)

[SISSA University, Trieste, Italy, 23/07/2018 – 27/07/2018]

<https://indico.sissa.it/event/23/>

DIGITAL SKILLS

Software for scientific editing and production

Tecplot360 / Wolfram Mathematica / LaTeX / Gnuplot / Paraview / GiMP

Operating systems used

Linux / Windows / IOs

Programming languages

C / C++ / Python / Fortran

HPC libraries

PETSc / deal.II

HONOURS AND AWARDS

Laureato eccellente 2018

Fondazione Roma Sapienza [2017]

Among the 500 best graduate students for the academic year 2016/2017

LANGUAGE SKILLS

Mother tongue(s): **Italian**

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Roma, 23/10/2022

Firma (Dario Abbondanza)

