

ALBERTO CIAMPAGLIA

PhD Fellow/Mechanical Engineering

@ alberto.ciampaglia@polito.it

+39 366 3208213

aciampaglia

12/06/1993



EXPERIENCE

Pre-doctoral visiting researcher

Northwestern University

May 2021 - currently

- Concurrent multi-scale simulation with data-driven reduced order models of composite structure with woven and uni-directional fibers
- Mechanistic data science algorithm for material laws discovery from experimental Digital Image Correlation data
- Multimodal integration of experimental and artificial data for active learning material law under multiaxial stress
- TA for Mechanistic Data Science and Deep Learning Discrete Calculus courses
- Proposal submission for Air Force Research Lab, Navy and NSF calls in the field of structure-property prediction of composite materials

PhD Fellow

Department of Mechanical Engineering, Politecnico di Torino

Apr 2019 - currently

- Numerical analysis of composite structures under quasi-static and dynamic loads in non-linear field with in-house code and commercial software
- Study and test of optical sensor integrated in laminated structure for shape and damage sensing
- Data-driven Structural Health Monitoring System for damage sensing and failure prediction: design and test
- Study on the strain sensitivity of carbon nano-particles composite
- Experimental test on composite materials with hydraulic tensile machines under dynamic and quasi-static loads and drop dart machine for impact loads
- Design, optimization, manufacturing and testing of an origami-shaped composite crashbox.
- Proposal submission for Horizon Europe call on integrated characterization and modeling methodology for composite crash structures

Junior Researcher

CARS - Center for Automotive Research and Sustainable mobility

Jan 2020 - currently

- Multidisciplinary research project on smart structures for lightweight vehicles
- Active research collaborations with OEM and Tier I automotive companies

EDUCATION

Specializing Master in Innovative products and technologies for automotive suspensions

Politecnico di Torino and Marelli

Jan 2018 - Mar 2019

M.S. in Mechanical Engineering

Politecnico di Torino

Oct 2015 - Jan 2017

B.S. in Mechanical Engineering

Università degli studi Federico II di Napoli

Oct 2012 - Sept 2015

SOFTWARE/PL

LS Dyna

Altair Hyperworks

Abaqus

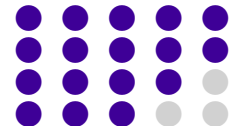


MS Office

MatLab

Python

LabView



RESEARCH PROJECTS



Damage detection in composite suspension

Principal Investigator, funded by Marelli Ride Dynamics



Flexible Link Elevated Compliance Suspension(FLECS) lightweight design

Project engineer, Marelli Ride Dynamics



Design of an innovative composite chassis lay-out

Design/CAE/test, Thesis project

RESEARCH TOPIC

Composite structures

Material mechanic

Finite Element Analysis

Multiscale

Structural Monitoring

Machine learning

Innovation Engineer

Marelli

📅 Jan 2018 – Mar 2019

📍 Torino, ITA

- Research on innovative materials, processes and technologies. Specialist in design and structural analysis of composite material components.
- Project leader for "Flexible Link and Elevated Compliance suspension material replacement"
- Digital coupling of RTM and Injection molding processes with resultant micro-structure
- Virtual validation of carbon fibre epoxy suspension system with 40 % mass decrease respect to previous design

Undergraduate

IEHV Research Group

📅 Dec 2016 – Dec 2017

📍 Torino, ITA

- Non-linear Finite Element Analysis with curved element and snap-through instabilities
- Quasi-static and impact tests on composite materials specimens and prototypes
- Design of a suspension test rig for kinematic and compliance analysis
- Machine learning for rapid design of a composite leaf spring

PUBLICATIONS

📄 Journal Articles

- A Ciampaglia, e. a. (2021). Impact response of an origami-shaped composite crash box: Experimental analysis and numerical optimization. *Composite Structures*, 256.
- A. Ciampaglia, e. a. (2021). Artificial intelligence for damage detection in automotive composite parts: A use case. *SAE Technical papers (in press)*.
- A Ciampaglia, A. S., & Belingardi, G. (2020). Design and analysis of automotive lightweight materials suspension based on finite element analysis. *Proceedings of the Istitution of Mechanical Engineers. Part C, Journal of Mechanical Engineering Science*.

👥 Conference Proceedings

- A Ciampaglia, e. a. (2020). Impact response of an origami-shaped composite crash box: Experimental analysis and numerical optimization. In *Joint event: Iccs23 - 23rd international conference on composite structures mechcomp6 - 6th international conference on mechanics of composites*, UFP.
- Ciampaglia, A. (2020). Machine learning for damage sensing in composite structures. In *Machine learning in science and engineering, poster session*, Columbia Data Science Institute, Columbia University of New York.
- Ciampaglia, A., & Belingardi, G. (2019). Combined classification and regression artificial neural network for structural health monitoring of automotive suspension. In *Automotive in ai era*, Altair Engineering.

LANGUAGES

Italian
English
Spanish



REFEREES

Prof. Davide Paolino, PhD Advisor

@ Politecnico di Torino

✉ davide.paolino@polito.it

C.so Duca degli Abruzzi 24, Torino, Italy

Prof. Giovanni Belingardi, former PhD Advisor

@ Politecnico di Torino

✉ giovanni.belingardi@polito.it

C.so Duca degli Abruzzi 24, Torino, Italy

Ing. Andrea Santini

@ Marelli

✉ andrea.santini@marelli.com

Strada del Drosso, Torino, Italy

COURSES AND CERTIFICATIONS

Relevant courses

- Advances in Experimental mechanics, AIAS PhD Summer School, 2020
- Virtual Manufacturing and Testing of composites, N. Zobeiry and R. Vaziri, British Columbia, 2019
- Structural and Computational Mechanics Modeling of Multilayered Composite and Sandwich Beam, Plate, and Shell Structures, A. Tessler, NASA, 2019
- Crash of composite structures, LS-Dyna Dynamore, 2017
- Innovation4Change, CERN 20 weeks innovation program for selected PhDs and MBAs

Certifications

- IELTS 7.0, British Council, 2017
- EY Next Car Innovation Challenge award, 2018

LIFE PHILOSOPHY

"I can accept failure, but I can not accept not trying."