Fabio Addona

19958, Lewes, Delaware, US
fabio.addona1@gmail.com • +1 (601) 509-1724
Skype: f.addo88

EDUCATION

University of Parma – University of Granada Nov 2015 – Mar 2019
Doctor Europaeus (co-tutorship program)

- PhD in Civil Engineering (with honors)
  - Thesis: Swell and wind-waves interaction under partial reflection conditions Experimental activity studying the interaction between paddle waves, wind and reflective conditions.
  - Advisors: Prof. Sandro Longo (Parma) and Dr. María Clavero (Granada).
  - Notes: Seven-month stay in Granada for the experimental activity, using Laser Doppler Velocimetry for velocity measurements and ultrasonic probes for free surface measurements.
  - Key words: water waves reflection, wave shear stress, swell and wind waves.
  - Other activities:
    - Experiments on wind-current interaction.
    - Experiments on air-sea interaction for paddle waves opposing wind using Stereoscopic Particle Image Velocimetry.

University of Parma, Parma, Italy Oct 2011 – Mar 2015

- MSc. In Environmental Engineering (with honors)
  - Thesis: Experimental study of gravity currents (in Italian).
  - Advisor: Prof. Sandro Longo (Parma).
  - Key words: gravity currents, internal waves, environmental fluid mechanics.

University of Parma, Parma, Italy Oct 2007 – Oct 2011

- BSc. in Environmental Engineering

ACADEMIC POSITION

University of Delaware, Delaware, US Sep 2021 – currently
Air-Sea interaction Lab, Lewes, DE

Post-Doc Researcher

- Air-sea interaction experiments using PIV and LIF techniques
  - Air-water measurements. Simultaneous measurements of the flows on both sides of the air-sea interface to investigate the kinematics and dynamics of the coherent structures and turbulence that drive these interfacial fluxes.
    - Perform controlled laboratory experiments to measure the flow on both sides of the air-water interface simultaneously
    - Evaluate the coupling and potential causality between the turbulent coherent structures on both sides on the interface
    - Assess the contribution and influence of a wavy interface on the turbulent fluxes
    - Compare these results with established turbulent boundary layer results.
    - Report and publish the results

- Drag coefficient over shoaling wind waves. Laboratory observations of turbulent wind over mechanically generated shoaling waves forced by wind.
    - Perform wind and wave observations in deep water conditions
    - Perform wind and wave observations with an artificial bottom testing different shoaling conditions
    - Investigate the effect of wave nonlinearity/asymmetry on the airflow
    - Perform wave boundary layer analysis
    - Report and publish the results
- Supervisor: Dr. Fabrice Veron

University of Bologna, Bologna, Italy — Feb 2019 – Aug 2021
Post-doctoral Research Fellow

- Coastal video-monitoring and data analysis
    - Projects:
        - Innovative Strategies, Monitoring and Analysis of the Coastal Erosion Risk (STIMARE).
        - Coastal Monitoring Techniques (TAO).
    - Supervisor: Prof. Renata Archetti
    - Duties:
        - Development of coastal analysis and shell scripts to control a built-in video-monitoring station using a Raspberry Pi and to perform coastal erosion studies for risk assessment, including shoreline detection, runup analysis and intertidal bathymetry reconstruction.
        - Automatization of data acquisition, transfer and analysis from a low-cost intelligent video-monitoring station for coastal erosion studies.
- Other activities:
    - Fundamental research (experimental study of turbulent fountains)
        - Duties:
            - Planning and carrying out experiments in laboratory
            - Deploying the instrumentation (Acoustic Doppler Current Profiler for velocity measurement, video camera for Image Processing and conductivity probe for density measurements).
            - Performing data analysis through MATLAB
            - Writing for publication on scientific journals.

OTHER RESEARCH EXPERIENCES

Instituto Interuniversitario del Sistema Tierra en Andalucía (IISTA), University of Granada, Spain — May 2015 – Jul 2015

- Air-water interaction
    - Project: Erasmus + Traineeship.
    - Supervisor: Prof. Miguel Losada.
    - Experimental activity about air-sea interaction using Laser Doppler Velocimetry, Pitot tube and resistive probes.

RESEARCH TOPICS

WATER WAVES

- Partial reflection of water waves in laboratory.
- Paddle waves and wind interactions.
- Experimental and theoretical analysis of regular waves.
- Air-sea interaction.
- LDV flow velocity measurements and data analysis.
- PIV (Particle Image Velocimetry.
- LIF (Laser-Induced Fluorescence)

FUNDAMENTAL FLUID MECHANICS

- Gravity currents in confined stratified ambient fluid and critical regimes (inertial and viscous).
- Turbulent fountains in homogenous ambient fluid.

COASTAL ENGINEERING

- Coastal erosion video monitoring.
- Image processing.

SKILLS

GENERAL

- Self-motivated and proactive.
- Ability to work as a part of a team with a proper management of the individual work, mainly developed during the PhD period (in particular during the stay in Granada).
- Ability to face and prioritize several tasks and issues, mainly developed during the post-doctoral period.
- Planning and conducting experimental activities, deploying instrumentation, acquiring and analyzing data.
- Scientific writing for publishing in peer-reviewed top journals
- Good command of English and Spanish.

SPECIFIC

- Data analysis: MATLAB, Python.
- Data acquisition: MATLAB, LabVIEW.
- Theoretical computations: Mathematica, MATLAB.
- Data representation: Grapher, MATLAB.
- Figures and schemes: Corel Draw.
- Scientific writing: LaTeX.
- General duties: Microsoft Office Package.
- OS: Microsoft, Linux (ArchLinux, Manjaro).

MISCELLANEOUS

TEACHING

- Hydraulics, Università di Bologna, 2019-2020 (assistance).
- Hydraulics, Università di Parma, 2017-2018 (assistance).
- Hydraulic Measures and Controls (in laboratory), 2017-2018 (assistance).
- Fluid Mechanics, Università di Parma, 2015-2016 (assistance).

MENTORING

- 3 MSc theses co-supervisor

SPONSORS FOR RESEARCH ACTIVITY

- Emilia-Romagna Region (Italy), through the Regional Operative Program – European Funds for Regional Development (POR-FESR).
- Italian Ministry for Environment, Land and Sea Protection (MATTM)
- MIUR (Italian Ministry of University and Research).
- Erasmus+ Traineeship Program, 2015.

INFORMATION ON WEB

- Scopus
- Google Scholar
- Orcid
- Publons
- ResearchGate
- LinkedIn

RESEARCH TEAMS

- Hydraulic laboratory group from University of Parma (Head: Sandro Longo)
- Environmental Fluid Dynamics Research Group from University of Granada (Miguel Losada, Asunción Baquerizo, Miguel Ortega-Sanchez, María Clavero)
- Research group headed by Renata Archetti (University of Bologna)

INTERNATIONAL CONTACTS FOR REFERENCES

- Miguel A. Losada, Professor Emeritus, University of Granada, Spain, mlosada@ugr.es
- Sandro Longo, Professor, Università di Parma, Italy, sandro.longo@unipr.it
- Fabrice Veron, Professor, University of Delaware (DE), US, fveron@udel.edu

INTERESTS

Sport (European football), reading, travelling.

PUBLICATIONS

JOURNALS

[1] A. Capolupo, C. Monterisi, A. Saponieri, **F. Addona**, et al. An interactive WebGIS framework for coastal erosion risk management, Remote Sensing (UNDER REVIEW), 2021.

[2] **F. Addona**, L. Chiapponi, R. Archetti, 2021, Velocity and density measurements in forced fountains with negative buoyancy, Physics of Fluids (ACCEPTED), 2021.

[3] **F. Addona**, L. Chiapponi, M. Clavero, M.A. Losada, and S. Longo, "On the interaction between partially-reflected waves and an opposing wind", Coastal Engineering, 162, 103774, 2020.

[4] L. Chiapponi, **F. Addona**, P. Diaz, M.A. Losada and S. Longo," Statistical analysis of the interaction between wind-waves and currents during early wave generation", Coastal Engineering. 159, 103672, 2020.

[5] R. Archetti, **F. Addona**, M.G. Gaeta, L. Cantelli, C. Romagnoli, F. Sistilli and G. Stanghellini, "Coastal vulnerability assessment through complementary monitoring technologies: The case of Riccione", Italian Journal of Engineering Geology and Environment, 1, 5-12, 2020.

[6] **F. Addona**, A. Lira-Loarca, L. Chiapponi, M.A. Losada and S. Longo, "The Reynolds wave shear stress in partially reflected waves", Coastal Engineering, 318, 220–226, 2018

[7] L. Chiapponi, M. Ungarish, S. Longo, V. Di Federico and **F. Addona**, "Critical regime of gravity currents flowing in non-rectangular channels with density stratification", Journal of Fluid Mechanics, vol. 840, 579–612, 2018.

[8] S. Longo, M. Ungarish, V. Di Federico, L. Chiapponi, and **F. Addona**, "Gravity currents in a linearly stratified ambient fluid created by lock release and influx in semi-circular and rectangular channels", Physics of Fluids, 28(9), 096602, 2016.

[9] S. Longo, M. Ungarish, V. Di Federico, L. Chiapponi, and **F. Addona**, "Gravity currents produced by constant and time varying inflow in a circular cross-section channel: experiments and theory", Advances in Water Resources, 90, 10–23, 2016.

CONFERENCES

[1] **F. Addona**, L. Chiapponi, M.A. Losada, and S. Longo, "Air-water interaction of paddle waves under wind forcing", Virtual International Conference on Coastal Engineering (vICCE2020), 6-9 October 2020.

[2] R. Archetti, M.G. Gaeta, **F. Addona**, L. Damiani, A. Saponieri, M.G. Molfetta and M. Bruno, "Assessment of coastal vulnerability based on the use of integrated low-cost monitoring approach and beach modelling: two Italian study cases", Virtual International Conference on Coastal Engineering (vICCE2020), 6-9 October 2020.

[3] R. Archetti, **F. Addona**, M.G. Gaeta, L. Cantelli, C. Romagnoli, F. Sistilli, and G. Stanghellini, "Coastal vulnerability assessment through complementary monitoring technologies: the case of Riccione". Short Course/Conference on Applied Coastal Research (SCACR), Bari (Italy), 9-11 September 2019.

[4] R. Archetti, L. Damiani, … , **F. Addona**, … , L. Pratola and M.G. Molfetta, "Innovative strategies, monitoring and analysis of the coastal erosion risk: The STIMARE project", inProceedings of the International Offshore and Polar Engineering Conference, 3, 3836-3841, 16-21 June 2019.

[5] L. Chiapponi, P. Diaz, **F. Addona**, M.A. Losada and S. Longo, "An experimental study of the interaction between wind-generated waves and depth averaged currents". XXXVI Conference in Hydraulics and Hydraulics Structures, Ancona (Italy), 12-14 September 2018.

[6] **F. Addona**, A. Lira-Loarca, L. Chiapponi, M. Clavero, M.A. Losada and S. Longo, "Spatial variation of shear stresses under partial reflection conditions. An experimental study". XXXVI Conference in Hydraulics and Hydraulics Structures, Ancona (Italy), 12-14 September 2018.

[7] A. Lira-Loarca, **F. Addona**, M. Clavero, S. Longo, A. Baquerizo, and M.A. Losada,. Estudio experimental del transporte de cantidad de movimiento bajo la influencia de viento. XIV Jornadas Españolas de Ingeniería de Costas y Puertos, Alicante (Spain), 24-25 May 2017. (in spanish)

[8] **F. Addona**, M. Ungarish, V. Di Federico, L. Chiapponi, and S. Longo, S, "Gravity currents in linearly stratified ambient fluid". XXXV Conference in Hydraulics and Hydraulics Structures, Bologna (Italy), 14-16 September 2016.

Fabio Addona