

Paolo Pezzutto

Scientist @ CNR-IRBIM

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Scopus ID: 50262753700
WoS ID: A-2222-2015

education

- 2013 Dottorato (PhD) Civil & Env. Eng. Sciences University of Padova - Italy
On Floating Breakwaters Efficiency - a 2DV Parametric Based Analysis. [download](#)
The thesis explores the efficiency and the energy dissipation capacity of commercial pontoons, up to 2nd order in wave steepness. In contains a dissertation on alternative algorithms for the separation of incident and reflected waves in (linear and non-linear) non-stationary conditions.
- 2007 Laurea Civil Eng. - Hydraulics University of Padova - Italy
Second Order Laboratory Wave Generation with Wedge-type Paddle - The CIEM Wave Flume at UPC.

interests

professional: nonlinear waves; water waves measurements; water waves physical and numerical modelling; uncertainty assessment of forecast/hindcast systems; wave energy harvesting;
personal: cycling, wood, grass, piano and keyboards

technical skills

macro: digital signal processing, wave fields decomposition and reconstruction, wave generation, calculus; scripting: Python, Octave/Matlab, bash, VBA, Lisp; coding: Fortran 77↑; strange files: NetCDF, grib, shapefiles, xml; calculus tools: Maxima, Mathematica; drawing tools: QGis, ArcView, ArcGis, AutoCad.

languages

italian: mother tongue; english: working proficiency; spanish: working proficiency

experience

- 2022– CNR - IRBIM Ancona, Italy
Scientist
- Brand new experience

experience

- 2021 University of Torino - Dept. of Physics Torino, Italy
Research Fellow
- Calibration and set up of wave flume, including acquisition of instrumentation and programming/scripting for data analysis
 - Design, construction and management of a physical model concerning a device for coastal protection
 - Tutoring of one PhD student, one MSc students and one BSc student
 - Reporting and dissemination
- 2013–2020 CNR - Institute of Marine Sciences Venezia, Italy
Scientist / Research Fellow
- Coupling a hydrodynamic model (SHYFEM) to spectral wave models, via coupler (OASIS) libraries
 - Tuning of an operational Adriatic wave forecasting system (WWIII)
 - Optimisation of predictors for extreme wave forecasting (WAM)
 - Tuning of an operational Mediterranean wave (WAM) to hydrodynamic (NEMO) coupled system
 - Development of verification metrics for sea-state integral variables
 - Verification of a Mediterranean surge EPS (*ongoing*)
 - Validation, verification and inter-comparison of a number of ensemble forecast systems, with focus on short-term water waves predictions.
 - Development of software and (mainly) python toolboxes for:
 - operational forecasting
 - forecast verification
 - quality control of buoy wave records
 - grib to (self speaking) NetCDF conversion and compression of gridded ensemble forecast data
 - error analysis of buoy and remote sensing (altimeters, scatterometers) wind and wave measurements
 - Surface waves measurements (open sea)
 - Implementation of algorithms for interpretation of measurements of stationary and non-stationary wave fields
 - Partitioning of directional spectra
- 2010–2013 University of Padova Padova, Italy
PhD student
- Collaboration to the set up and results analyses of a number of physical models (floating breakwaters, wave energy converters)
 - Monte-Carlo analysis on uncertainties of classical algorithms for separation of incident, reflected, transmitted and dissipated wave energy
 - Development of alternative algorithms for the separation of incident and reflected waves in (linear and non-linear) non-stationary conditions
 - Development of VBA, MATLAB and LabView tool for laboratory data acquisition, storage and post-processing
 - Attended to the scheduled courses of the *school* (Advanced calculus, Numerical methods, Fluid mechanics)
- 2008–2010 Beta Studio, s.r.l. Ponte San Nicolò, Italy

Collaboration

Implementation of hydraulic models, use of commercial hydraulic models, reporting, drawings of hydraulic structures and geo-referenced maps for:

- *surface water hydrology and drainage systems* (design of a motorway drainage system)
- *river hydraulics* (design of a dam system for the mitigation of a river flooding events, including hydrodynamic modelling and risk mapping)
- *water supply* (design of a pumping well system and a water main capacity improvement)

2008 University of Padova Padova, Italy
Collaboration
Set-up and calibration of flume (2D) and tank (3D) wave generators.

projects

2021 POC - MetaReef as member of UniTo team
Proof of Concept
Contributing with expertise in physical modelling and programming.

2019→2020 PELMO as member of CNR-ISMAR team
PrevisionE nell'aLto adriatico del Moto Ondoso
Contributing with expertise in programming, optimization, forecast verification and uncertainty analysis.

2018→2019 LATEMAR as member of CNR-ISMAR team
LARgesT wavEs in MARine environment New products for wave model forecast
Contributing with expertise in numerical optimization and forecast verification.

2016→2019 CEASELESS as member of CNR-ISMAR team
Copernicus Evolution and Applications with Sentinel Enhancements and Land Effluents for Shores and Seas
Contributing with expertise in forecast verification and uncertainty analysis.

2016→2018 Wave2Nemo as member of CNR-ISMAR team
R&D for Copernicus Marine Environment Monitoring Service - Coupled ocean-wave model development in forecast environment.
Contributing with expertise in forecast verification, uncertainty analysis and wave averaged systems.

2013→2015 MyWave - FP7 as member of CNR-ISMAR team
A pan-European concerted and integrated approach to operational wave modelling and forecasting – a complement to GMES MyOcean services.
Contributing with expertise in forecast verification.

2010→2013 THESEUS - FP7 as PhD student, member of UniPD team
Innovative technologies for safer European coasts in a changing climate.
Contributing with expertise in wave analysis and wave generation.

academic experiences

- 2015 Extracurricular postgraduate courses Institut d'Études Scientifiques de Cargèse - France
Rogue and shock waves in nonlinear dispersive media - Onorato M. et al.
- 2011 Extracurricular postgraduate courses University of Trento - Italy
Advances numerical methods for free surface hydrodynamics - Casulli V.
Advanced numerical methods for hyperbolic equations and applications - Toro E., Dumbser M.
- 2010 Extracurricular postgraduate course UNIVPM, Ancona - Italy
Ocean waves and waves-structure interactions (*Onde di mare e loro interazioni con strutture*) - Brocchini M.
- 2004–2005 Visiting Student (UE Erasmus Program) UPC, Barcelona - Spain
Laboratory research activities at the Maritime Engineering Lab (LIM), Dep. de Ingeniería Idráulica Marítima y Ambiental (EHMA - UPC), in partial fulfillment of the title of *Laurea* in Civil Eng.
- 2002–2003 Visiting Student (UE Erasmus Program) DTU, Lyngby - Denmark
Attendance of Academic courses (Linear and Nonlinear Wave Dynamics, Sediment transport, Hydrology, Advanced Geotechnic, Maritime Engineering) in partial fulfillment of the title of *Laurea* in Civil Eng.

Autorizzo al trattamento dei miei dati personali ai sensi della legge vigente sul

