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Gabriella Petaccia

Date of birth: 15/10/1976 | **Nationality:** Italian | **Gender:** Female |

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Address: via vincenzo monti, 23, 27100, Pavia, Italy (Home)

WORK EXPERIENCE

2019 – CURRENT Pavia, Italy

ASSOCIATE PROFESSOR WITH TENURE OF HYDROLOGY AND WATER RESOURCES UNIVERSITY OF PAVIA

Main institutional tasks:
Chair of the Master's Degree in Environmental Engineering.

Research areas:
-Transport of floating wooden debris in free surface flows
-Hydrodynamics of shallow and deep lakes
-Flood propagation
-Development and application of methodologies for flood simulation through hydraulic structures (bridges).
-Development of GPU techniques to perform real time flood propagation simulations.
-Development of Overland Flow models at basin scale
-Lag time estimation

Teaching:
Flood propagation (6 ECTS, 2015-present)
Hydrology (6 ECTS, 2019-present)
Hydraulic Measurements (3 ECTS, 2010-2018 and 2022-present)

Research Grants
-Supervisor of the research grant by Domenico Ferraro: "Development of an overland flow model in the framework of the Cariplo funded project ANDROMEDA: A New integrateD hydROgeological Model to assEss landsliDes and flood prone Areas in Oltrepò Pavese" -Supervisor of the research grant by Elisabetta Persi "Application of OrsaDEM and ORSA2Dmodel at the Lambro case study in the framework of Cariplo funded project FLORIMAP: Smart FLOod RIsk MAnagement Policies

Advising phd students
Livia Servanzi, PhD student, 2017-2020 Effects of streamflow regulation on fish and benthic macroinvertebrates in a reach of the ticino river"

Editor of the Special Issue of the open access MDPI Water (ISSN 2073-4441) "Advances in Dam-Break Modeling for Flood Hazard Mitigation: Theory, Numerical Models, and Applications in Hydraulic Engineering

2007 – 2019 Pavia, Italy

ASSISTANT PROFESSOR WITH TENURE OF HYDROLOGY AND WATER RESOURCES UNIVERSITY OF PAVIA

Main institutional tasks:
Chair of the Master's Degree in Environmental Engineering.

Research areas:
-Transport of floating wooden debris in free surface flows
-Hydrodynamics of shallow and deep lakes
-Flood propagation
-Development of a coupled 1D-2D flood model and its application to Tiber River

-Development and application of methodologies for flood simulation through hydraulic structures (bridges).
-Development of GPU techniques to perform real time flood propagation simulations.
-Hydrologic modeling using geomorphologic Instantaneous Unit Hydrograph Experimental modeling of dam spillways
-Development of Overland Flow models at basin scale

Teaching:
Flood propagation (6 ECTS, 2015-2019)
Hydraulic measurement (3 ECTS 2010-2017)
Hydrology (6 ECTS 2010-2013)

Advising phd students
Elisabetta Persi , PhD student, 2014-2017 Eulerian–Lagrangian modelling of large floating debris transport during floods"

2004 – 2007 Pavia, Italy
UNIVERSITY RESEARCH ASSISTANT UNIVERSITY OF PAVIA

Research Areas
Development of 1D and 2D flood propagation models and their applications to real world cases
Mapping of floodable areas by means of 1D and 2D models

EDUCATION AND TRAINING

1995 – 2000 Italy
MS IN ENVIRONMENTAL ENGINEERING University of Rome La Sapienza

Supervisor: prof. Fabrizio Savi

Final grade 110/100 | **Thesis** " Shock waves propagation by means of high resolutions numerical methods"

pavia
PH.D. IN CIVIL ENGINEERING University of Pavia

Supervisor Prof. Lucio Ubertini

Address via ferrata 3, 27100, pavia | **Thesis** Shock waves propagation in natural valleys due to barrage breaking

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C2	C2	C2
SPANISH	A2	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

2005
G. Petaccia, F. Savi. Discussion of "numerical and experimental study on two dimensional flood flows with and without structures"

Journal of Hydraulic Engineering 131 (4) , pp. 335

2010

G. Petaccia , S. Soares-Frazão, F. Savi , L. Natale, Y. Zech " Simplified versus detailed two dimensional approaches to transient flow "modelling in urban areas,

Journal of Hydraulic Engineering, vol 136, n 4, pp 262-266.

2012

Escuder-Bueno, J.T. Castillo-Rodriguez, S. Zechner, C. Jöbstl, S. Perales-Momparler, G.Petaccia. A quantitative flood risk analysis methodology for urban areas with integration of social research data,

Natural Hazards and Earth System Science 12 (9) , pp. 2843-2863

2013

G. Petaccia, L. Natale, F. Savi, M. Velickovic, Y. Zech, S. Soares-Frazão. Flood wave propagation in steep mountain rivers

Journal of Hydroinformatics 15 (1) , pp. 120-137

2013

L. Natale, G. Petaccia 2013. Design flood estimation: lessons learnt from Sella Zerbino dam-break

Italian Journal of Engineering Geology and Environment, (6), 437-443

2013

E. Natale, G. Petaccia . ORSADEM: a one dimension shallow water code for flood inundation modelling,

Journal of Irrigation and drainage, 62(2) ; 29-40.

2015

G.Petaccia, A. Fenocchi. Experimental assessment of the stage-discharge relationship of the Heyn siphons of Bric Zerbino Dam.

Flow Meas. Instrum., 41;36-40;doi: 10.1016/j.flowmeasinst.2014.10.012.

2015

P.Costabile, F.Macchione, L.Natale, G.Petaccia. Flood mapping using LIDAR DEM. Limitations of the 1-D modeling highlighted by the 2-D approach

Natural hazard, 77(2);181-204; DOI: 10.1007/s11069-015-1606-0

2015

P.Costabile, F.Macchione, L.Natale, G.Petaccia. Comparison of scenarios with and without bridges and analysis of backwater effect in 1-D and 2-D river flood modelling

CMES Vol.109(2): 81-103, DOI:10.3970/cmes.2015.109.081

2016

M.Morales- Hernandez, G.Petaccia, P.Brufau, P.Garcia Navarro. Conservative 1D-2D coupled numerical strategies applied to river flooding: the Tiber (Rome),

Applied Mathematical Modelling 40: 2087-2105, DOI: 10.1016/j.apm.2015.08.016

2016

Fenocchi, G.Petaccia, S.S.Sibilla. Modelling flows in shallow (fluvial) lakes with prevailing circulations in the horizontal plane: limits of 2D compared to 3D models

Journal of Hydroinformatics, 18(6): 928-945. DOI: 10.2166/hydro.2016.033

2016

G.Petaccia, E.Torti, F.Leporati. OpenMP and CUDA Simulations of Sella Zerbino Dam Break on Unstructured Grids

Computational Geosciences, DOI 10.1007/s10596-016-9580-5

2016
G.Petaccia, C.Lai, C.Milazzo, L.Natale. The collapse of Sella Zerbino gravity dam,

Engineering Geology 211: 39-49, DOI 10.1016/j.enggeo.2016.06.024

2016
E.Persi, G.Petaccia, S.Sibilla. Large wood transport modelling by a coupled Eulerian–Lagrangian approach,

Natural Hazard, 91(1): 59-74 DOI : 10.1007/s11069-017-2891-6

2018
G.Petaccia, E.Persi ,S.Sibilla, P.Brufau, P.Garcia Navarro, Enhanced one-way coupled swe-de model for floating body transport

Italian Journal of Engineering Geology and Environment, DOI: 10.4408/IJEGE.2018-01.S-15

2018
E.Persi, G.Petaccia, S.Sibilla, P. Brufau, P.Garcia Navarro, Calibration of a dynamic Eulerian-Lagrangian model for the computation of wood cilinders transport in shallow water flow

Journal of Hydroinformatics, DOI : 10.2166/hydro.2018.085

2019
E.Persi, G.Petaccia, A. Fenocchi, S. Manenti, P. Ghilardi, S.Sibilla, Hydrodynamic coefficients of yawed cylinders in open-channel flow,

Flow Measurements and Instrumentation, DOI 10.1016/j.flowmeasinst.2019.01.006

2019
G. Petaccia, L. Natale, 1935 Sella Zerbino dam break case revisited: a new hydrologic and hydraulic analysis

Journal of Hydraulic Engineering, DOI 10.1061/(ASCE)HY.1943-7900.0001760

2019
D.Ferraro, P.Costabile, C.Costanzo, G.Petaccia, F.Macchione A Spectral analysis approach for the a-priori generation of computational grids in the 2-D hydrodynamic -based runoff simulations at a basin scale

Journal of Hydrology (2019),DOI https://doi.org/10.1016/j.jhydrol.2019.124508

2020
Costabile, P., Costanzo, C., Ferraro, D., Macchione, F., Petaccia, G.Performances of the new HEC-RAS version 5 for 2-D hydrodynamic-based rainfall-runoff simulations at basin scale: Comparison with a state-of-the art model

Water (Switzerland) Volume 12, Issue 9September 2020 Article number 3433

2020
Persi, E., Petaccia, G., Sibilla, S., Brufau, P., García-Palacin, J.I. Experimental dataset and numerical simulation of floating bodies transport in open-channel flow

Journal of Hydroinformatics, Volume 22, Issue 5, Pages 1161 - 11811

2021
Alamayreh, M.I., Fenocchi, A., Petaccia, G., Sibilla, S., Persi, E. Numerical analysis of fluid flow dynamics around a yawed half-submerged cylinder inside an open channel

Journal of Hydrodynamics Volume 33, Issue 1, Pages 111 - 119

2021

Persi, E., Petaccia, G., Sibilla, S., Bentivoglio, R., Armanini, A. A one-way coupled hydrodynamic advection-diffusion model to simulate congested large wood transport

Hydrology Volume 8, Issue 1, Pages 1 - 20

2021

Aureli, F., Maranzoni, A., Petaccia, G. Review of historical dam-break events and laboratory tests on real topography for the validation of numerical models

Water (Switzerland) Volume 13, Issue 14

2022

Aureli, F., Maranzoni, A., Petaccia, G. Reply to AlQasimi, E.; Mahdi, T.-F. Comment on "Aureli et al. Review of Historical Dam-Break Events and Laboratory Tests on Real Topography for the Validation of Numerical Models. Water 2021, 13, 1968"

Water (Switzerland) Volume 14, Issue 2January-2

2022

Persi, E., Meninno, S., Petaccia, G., Sibilla, S., Armanini, A. Modeling Large Wood Transport in Semi-Congested Regime with Multiple Entry Points

Water (Switzerland) Volume 14, Issue 3

2022

2D hydrodynamic approach supporting evaluations of hydrological response in small watersheds: Implications for lag time estimation

Journal of HydrologyVolume 610July 2022 Article number 127870

Barbero, G. , Costabile, P. , Costanzo, C. , Ferraro, D. , Petaccia, G.

2022

Juvenile fish stranding induced by upstream gate operation: A risk assessment through eco-hydraulic modeling

Ecological EngineeringVolume 183October 2022 Article number 106753ite here the description...

Espa, P. , Petaccia, G. , Servanzi, L. , Sibilla, S.

2023

General Method Based on Regressive Relationships to Parameterize the Three-Parameter Depth–Duration–Frequency Curve

Atmosphere*Open Access*Volume 14, Issue 1, January 2023 Article number 190

Mottahedin, A. , Giudicianni, C. , Barbero, G. , Petaccia, G. , Creaco, E.

2024

A complete methodology to assess hydraulic risk in small ungauged catchments based on HEC-RAS 2D Rain-On-Grid simulations

Natural Hazards*Open Access*2024

Ennouini, W. , Fenocchi, A. , Petaccia, G. , Persi, E. , Sibilla, S.

2024

Measurement and analysis of the drag coefficient of wood accumulations at an ogee crested spillway

Journal of Hydrology, 2024, 631, 130798

Persi, E. , Pibia, E. , Petaccia, G. , Ghilardi, P. , Sibilla, S.

Advances in Dam-Break Modeling for Flood Hazard Mitigation: Theory, Numerical Models, and Applications in Hydraulic Engineering

Water (Switzerland), 2024, 16(8), 1093

Aureli, F. , Maranzoni, A. , Petaccia, G.

PROJECTS

2017 – CURRENT

RELAID REnaissance of LArge Italian Dams (RELAID),

Funded by MIUR, P.I. Carlo De Michele, co-PI's Gabriella Petaccia, Franco Macchione, Armando Brath, Marco D'Oria, (740.000 €)

2018 – 2021

FLORIMAP – Smart FLOod Risk Management Policies

financed by Fondazione Cariplo, P.I.:Renzo Rosso, co-PI's Carlo De Michele, Roberto Ranzi, Simona Sacchi e Gabriella Petaccia (200.000 €)

2017 – 2020

ANDROMEDA-A New integrateD hydROgeological Model to assEss landsliDes and flood prone Areas in Oltrepò Pavese-ANDROMEDA

financed by Fondazione Cariplo, P.I.:Claudia Mesina, co-PI's Luca Brocca (200.000 €)- Responsible for the Department of Civil Engineering and Architecture

2017 – 2020

"NEWFRAME project - NEtWork-based Flood Risk Assessment and Management of Emergencies

financed by Fondazione Cariplo, , P.I.:Enrico Creaco, co-PI's Mario Martina, participant

01/05/2024 – 31/10/2025

RETURN-PB

"Nuovi approcci per la valutazione della pericolosità idraulica nei piccoli bacini montani – RETURN-PB" per la realizzazione delle attività di ricerca previste nell'ambito dei bandi a cascata del Partenariato Esteso "Multi-Risk sciEnce for
resilienT commUnities undeR a changiNg climate (RETURN)", Codice progetto PE00000005.