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Education

Ph.D. in Hydraulic Engineering for the Environment and the Territory, University of Calabria, Italy 2008

M.S. Hydraulic Engineering, University of Calabria, Italy 2004

Field of interest

Fluid Mechanics, Computational Fluid Dynamics, Aerodynamics, Experimental Fluid Mechanics, Turbulence Modeling, Fluid Structure Interaction, Offshore structures.

Patents

Alfonsi, Giancarlo; Lauria, Agostino; and UNIVERSITA' DELLA CALABRIA, to OFFICINE MECCANICHE ZEMA High efficiency turbine impeller 11898543 Cl. F03D 9/37. (https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=WO002021111226A1). (2024)

Alfonsi, Giancarlo; Lauria, Agostino; and UNIVERSITA' DELLA CALABRIA, to OFFICINE MECCANICHE ZEMA “Turbina ibrida ad elevate prestazioni” , n. 201900022923, 04/06/2021 https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=IT201900022923A1&switchToLang=en). (2021)

Professional Experience

From 21-11-2022 to Present. Assistant Professor, Department of Innovation Engineering, Università del Salento, Lecce.

From 10-02-2023 – to Present. Scientific affiliation to the international research center "Centro euro-Mediterraneo sui Cambiamenti Climatici (CMCC)", Lecce.

From 02-05-2016 – 20-11-2022. Research Technician, Fluid Dynamics Laboratory of the Department of Civil Engineering of the University of Calabria. Conducting experimental tests of turbulent flows with LDV (Laser Doppler Velocimetry), PIV (Particle Image Velocimetry) and Pitot tube in the aerodynamic (wind tunnel experiments) and fluid dynamic field, managing the data acquisition system and the visualization system, designing experimental systems, developing, implementing and validating algorithms for the numerical integration of the Navier-Stokes equations using supercomputing techniques.

From 01-07-2014 to 25-02-2015. Visiting Scientist, National Observatory of Athens (NOA), Progetto "CoastalRisk" – Costruzione di scenari di rischio ambientale e socio-economico da onde anomale per le coste calabresi, all'interno del programma di intervento ARUE – Assegni di Ricerca Unione Europea – PO Calabria FSE 2007/2013 – Asse IV – Capitale umano – Obiettivo formativo M2 "Sostenere la realizzazione di percorsi individuali di alta formazione per giovani laureati e ricercatori presso organismi di riconosciuto prestigio nazionale e internazionale".

From 01-01-2014 to 30-06-2015. Research fellowship: "Costruzione di scenari di rischio ambientale e socio-economico da onde anomale per le coste calabresi", Università della Calabria, Dipartimento di Fisica, Rende (CS), Italy, in collaboration with the National Observatory of Athens (NOA), the Istituto Nazionale di Geofisica e Vulcanologia (INGV), and the ISAC-CNR e del Calpark S.C.p.A.

From 30-12-2014 to 21-11-2022 . Inspector – verifier of the GVR group (pressure equipment, vessels containing fluids under pressure, steam generators, pipes containing gas, vapours and liquids, heat generators powered by solid, liquid or gaseous fuel, ovens for chemical industries), in collaboration with Safety Systems srl – Notified Body authorised to issue CE certification, Via G. e F. Falcone, 22 – 87100 Cosenza.

From 01-10-2012 to 30-09-2013. Research fellowship: "Interazione moto ondoso - ostacoli semisommersi", Dipartimento di Ingegneria Civile dell'Università della Calabria.

From 21-03-2011 to 21-03-2012. Research fellowship: "Sviluppo di codici di calcolo per l'indagine del campo termofluidodinamico del reattore a pirogassificazione", Progetto Ecopyrogas, Industria 2015 – Bando Efficienza Energetica del Ministero dello Sviluppo Economico, Dipartimento di Ingegneria Chimica e Dei Materiali dell'Università della Calabria.

From 01-02-2010 to 30-04-2010. Research fellowship: “Sviluppo di codici di calcolo per l’indagine del campo termofluidodinamico del reattore a pirogassificazione”, Progetto Ecopyrogas, Industria 2015 – Bando Efficienza Energetica del Ministero dello Sviluppo Economico Dipartimento di Ingegneria Chimica e Dei Materiali dell’Università della Calabria.

From 17-05-2008 to 07-09-2009. Qualified Technician in Controls and inspections of lines and equipment in Petrochemical Plants and Refineries (Polimeri Europa Priolo G. (SR), Polimeri Europa Ragusa, Polimeri Europa Porto Marghera (VE), ENI Taranto Refinery, ENI Livorno Refinery), in collaboration with Eurocontrol S.r.l.

Editorial Board Activities and Review

From 25-10-2021 to Present. Academic Editor for the journal Mathematical Problems in Engineering (Online ISSN:1563-5147. Print ISSN:1024-123X. © John Wiley & Sons Ltd; https://onlinelibrary.wiley.com/page/journal/2629/homepage/editorial-board), formerly hindawi publishing corporation. https://www.scopus.com/sourceid/13082?origin=resultslist).

From 10-09-2021 to 20-05-2024. Guest Editor of the Special Issue "CFD Modeling of Turbulent Free Surface Flows" for the journal MDPI Water.

From 18-07-2021 to 10-03-2022. Guest Editor of the Special Issue "CFD Modeling of Free Surface Flows" for the journal MDPI Water.

From 12-06-2020 to 01-12-2022. Participation in the Reviewers Committee of the "2020 International Symposium on Water, Ecology and Environment (ISWEE 2020)" from December 6 to 8, 2020, Beijing Jiaotong University, Beijing, China.

From 18-02-2020 to Present. Member of the Reviewer Board of the journal Water MDPI (Switzerland).

From 07-11-2019 to 31-10-2020. Guest Editor of the Special Issue "Nonlinearity, Turbulence and Chaos in Space and Terrestrial Systems" for the MDPI journal Atmosphere.

From 01-06-2019 to 30-06-2019. Participation in the Reviewers Committee of the 7th International Engineering, Science and Technology Conference (IESTEC 2019) from October 9 to 11 in Panama City, Panama.

From 16-12-2016 to Present. Reviewer for ISI journals, including: Physics of Fluids (AIP), Journal of Pipeline Systems Engineering and Practice (ASCE), Water Resources Management (Springer), Fluids (MDPI), Energy (MDPI), Water (MDPI), Materials (MDPI), Applied Sciences (MDPI), Journal of Marine Science and Engineering (MDPI), Journal of Natural Sciences and Engineering (Elsevier), Mathematical Problems in Engineering (Hindawi), Ocean Engineering (Elsevier).

PUBLICATIONS

1. A. Lauria, D. Ferraro, S. Servidio, R. Gaudio (2025 Large Eddy Simulations of a rotating propeller in an equilibrium scour hole. River Flow - Proceedings of the 12th International Conference on Fluvial Hydraulics, River Flow 2024, pp. 520–528, doi: 10.1201/9781003475378-77
2. D. Ferraro, J.M. Domínguez, A. Lauria, C. Altomare, F. Aristodemo (2025). Smoothed particle hydrodynamics compared to finite volume methods in highly turbulent flow: A three-dimensional analysis of a marine propeller jet case. PHYSICS OF FLUIDS, vol. 37 (3), art. no. 035152, doi: 10.1063/5.0256484
3. G. Prenesti, A. Cassano, A. Lauria, A. Caravella, F. Macedonio, E. Tocci (2025). Unveiling the role of polypropylene interactions with lithium fluoride solutions: Insights into crystallization dynamics and membrane behaviour. Journal of Membrane Science, 2025, 723, 123905
4. A. Lauria, P. Loprieno, A. Francone, E. Leone, G. R. Tomasicchio (2024). Recent advances in understanding the dynamic characterization of floating offshore wind turbines. OCEAN ENGINEERING, vol. 307, ISSN: 0029 8018
5. A. Lauria, P. Loprieno, F. Rizzo, A. Severini, D. Foti, E. Leone, A. Francone, G. R. Tomasicchio (2024). On the effects of wind and operating conditions on mooring line tensions for floating offshore wind turbine. APPLIED OCEAN RESEARCH, vol. 152, ISSN: 0141-1187, doi: 10.1016/j.apor.2024.104197
6. Calomino F., D'Ippolito A., Lauria A., Alfonsi G., Gaudio R. (2024). Hydraulic models of silled orifices and stilling basins in online dams for flood reduction. INTERNATIONAL JOURNAL OF RIVER BASIN MANAGEMENT, vol. in press, p. 1-13, ISSN: 1571-5124, doi: 10.1080/15715124.2024.2389197
7. Caraccio, Paride, Marseglia, Guido, Lauria, Agostino, De Giorgi, Maria Grazia (2024). A novel deep learning approach for flow field prediction around airfoils leveraging computational space representation. PHYSICS OF FLUIDS, vol. 36, 107120, ISSN: 1070-6631, doi: 10.1063/5.0223617
8. Domenico Ferraro, Agostino Lauria, Nadia Penna, Roberto Gaudio (2024). Propeller scour phenomenon in the presence of a quay-wall and currents. OCEAN ENGINEERING, vol. 313, p. 1-12, ISSN: 0029-8018, doi: 10.1016/j.oceaneng.2024.119389
9. Fernandes S., Oliver-De La Cruz J., Morazzo S., Niro F., Cassani M., Durikova H., Caravella A., Fiore P., Azzato G., De Marco G., Lauria A., Izzi V., Bosakova V., Fric J., Filipensky P., Forte G. (2024). TGF-ß induces matrisome pathological alterations and EMT in patient-derived prostate cancer tumoroids. MATRIX BIOLOGY, vol. 125, p. 12-30, ISSN: 0945-053X, doi: 10.1016/j.matbio.2023.11.001
10. Ferraro, D, Servidio S, Lauria, A., Gaudio R (2024). Alocal measure of the helicity in turbulent flows. PHYSICS OF FLUIDS, vol. 36, 105146, ISSN: 1070-6631, doi: 10.1063/5.0223162

11. Fortunato G., Frega F., Lauria A., Zappani A. A. (2024). Documenting and analysing to preserve: An integrated approach between laser scanning and Computational Fluid Dynamics. The case study of the column of the temple of Hera Lacinia near Crotone. JOURNAL OF CULTURAL HERITAGE, vol. 66, p. 244-253, ISSN: 1296-2074, doi: 10.1016/j.culher.2023.11.020
12. Prenesti, Giuseppe, Petrassi, Edoardo Walter, Guzzo, Caterina, Mannella, Silvia, Stellato, Francesco, Crisafulli, Laura, Azzato, Giulia, Katovic, Andrea, Lauria, Agostino, Caravella, Alessio (2024). Three-Dimensional Morphological Study of MnTe-like Structures by Assessment of Tortuosity Tensor Using Computational Fluid Dynamics. PROCESSES, vol. 12, 2175, ISSN: 2227-9717, doi: 10.3390/pr12102175
13. De Bartolo S., Cafaro M., Rizzello S., Francone A., Martano P., Delle Rose M., Lauria A., Saponieri A., Tomasicchio G. R. (2023). Water Table Multi-Scaling Aquifer Data: An Integrated Groundwater Management Approach. In: Technologies for Integrated River Basin Management. vol. 44, p. 347-356, Cosenza:EDIBIOS, ISBN: 978-88-97181-87-3, Rende (CS), 22-23/06/2023
14. FERRARO Domenico, LAURIA Agostino, PENNA Nadia, GAUDIO Roberto (2023). Local scour in waterway docks. In: G. Frega F. Macchione. ICIRBM – 2023, Proceedings of the 44th Italian Conference on Integrated River Basin Management, University of Calabria, Italy, Technologies for Integrated River Basin Management, Tecniche per la Difesa del Suolo e dall'Inquinamento. vol. 44, p. 109-116, Cosenza:EDIBIOS, ISBN: 978-88-97181-87-3
15. Ferraro D., Aristodemo F., Lauria A., Lazzaro E., Pasquali D., Di Risio M. (2023). Effect of wave motion on the scouring caused by a marine propeller jet: An experimental and numerical study. OCEAN ENGINEERING, vol. 290, 116426, ISSN: 0029-8018, doi: 10.1016/j.oceaneng.2023.116426
16. Lauria, A, D'Ippolito, A, Calomino, F, Alfonsi, G. (2023). Discharge Coefficient Analysis for Sluice Gates Set in Weirs. In: Proceedings of the 3rd International Symposium on Water, Ecology and Environmen. p. 11 14, Setúbal:Scitepress, ISBN: 978-989-758-639-2
17. Meringolo D. D., Lauria A., Aristodemo F., Filianoti P. F. (2023). Large eddy simulation within the smoothed particle hydrodynamics: Applications to multiphase flows. PHYSICS OF FLUIDS, vol. 35, p. 1 21, ISSN: 1089-7666, doi: 10.1063/5.0150347
18. G. F. A. Brunetti, A. Lauria, and C. Fallico. "Comparison among variation models of the hydraulic conductivity with the effective porosity in confined aquifer." *IOP Conference Series: Earth and Environmental Science*. Vol. 958. No. 1. IOP Publishing, 2022.
19. A. D'ippolito, F. Calomino, G. Alfonsi, A. Lauria. Flow resistance in open channel due to vegetation at reach scale: A review. WATER, vol. 13, ISSN: 2073-4441, doi: 10.3390/w13020116, 2021
20. A. Lauria, D. Ferraro, N. Penna, R. Gaudio. "Numerical modelling of an unconfined ship propeller jet". Poster all' International CAE Conference and Exhibition, 2021, November 17-19, Vicenza, Italy.

21. D. Ferraro, A. Lauria, N. Penna, R. Gaudio. Temporal development of unconfined propeller scour in waterways. PHYSICS OF FLUIDS, vol. 33, p. 095119-1-095119-17, ISSN: 1070-6631, doi: 10.1063/5.0060990, 2021.
22. A. D'Ippolito, F. Calomino, G. Alfonsi G, A. Lauria. Drag coefficient of in-line emergent vegetation in open channel flow. INTERNATIONAL JOURNAL OF RIVER BASIN MANAGEMENT, p. 1-11, ISSN: 1571-5124, doi: 10.1080/15715124.2021.1961796, 2021.
23. A. Lauria, D. Ferraro, G. Alfonsi, R. Gaudio. Large-Eddy Simulation of turbulent natural-bed flow with OpenFOAM. pp. 83. In Atti del 37° Convegno Nazionale di Idraulica e Costruzioni Idrauliche. Ingegneria delle acque: cambiamenti globali e sostenibilità - ISBN:9788894379914, 14-16 giugno 2021
24. A. Lauria, G. Alfonsi, G. Principato, F. Zimbo, A. Fiorino. SIMULAZIONE NUMERICA DEL COMPORTAMENTO IDRAULICO DELLO SCARICO DI SUPERFICIE DELLA DIGA SUL TORRENTE MENTA. L'ACQUA, vol. 4, ISSN: 1125-1255, 2021.
25. A. Lauria, F. Calomino, G. Alfonsi, A. D'Ippolito. Discharge coefficients for sluice gates set in weirs at different ustream wall inclination. WATER, vol. 12, ISSN: 2073-4441, doi: 10.3390/w12010245, 2020.
26. A. Lauria, G. Alfonsi. Numerical investigation of ski jump hydraulics. JOURNAL OF HYDRAULIC ENGINEERING, vol. 146, 04020012, ISSN: 0733-9429, doi: 10.1061/(ASCE)HY.1943-7900.0001718, 2020.
27. A. Lauria, G. Alfonsi, A. Tafarojnoruz. Flow Pressure Behavior Downstream of Ski Jumps. FLUIDS, vol. 5, p. 1-14, ISSN: 2311-5521, doi: 10.3390/fluids5040168, 2020.
28. A. Tafarojnoruz, A. Lauria. Large eddy simulation of the turbulent flow field around a submerged pile within a scour hole under current condition. COASTAL ENGINEERING JOURNAL, vol. 62, p. 489-503, ISSN: 0578-5634, doi: 10.1080/21664250.2020.1807453, 2020.
29. C. Fallico, A. Lauria, F. Aristodemo. Porous Medium Typology Influence on the Scaling Laws of Confined Aquifer Characteristic Parameters. WATER, vol. 12, ISSN: 2073-4441, doi: 10.3390/w12041166, 2020.
30. A. Lauria, G. Alfonsi. Numerical Simulation of Ski-Jump Hydraulic Behavior. In: Lauria Agostino; Alfonsi Giancarlo. (a cura di): Sergeyev Y. D. Kvasov D. E., Numerical Computations: Theory and Algorithms. Third International Conference, NUMTA 2019, Crotone, Italy, June 15-21, 2019, Revised Selected Papers, Part II. vol. 11974, p. 422-429, Rende (CS): Springer International Publishing, ISBN: 978-3-030-40616-5, doi: 10.1007/978-3-030- 40616-5_39, 2020.
31. G. Alfonsi, D. Ferraro, A. Lauria, R. Gaudio. Numerical Investigation of Natural Rough-Bed Flow. In: Various Authors. (a cura di): Y. D. Sergeyev D. E. Kvasov, Numerical Computations: Theory and Algorithms. Third International Conference, NUMTA 2019, Crotone, Italy, June 15-21, 2019,

Revised Selected Papers, Part II. vol. Lecture Notes in Computer Science (LNCS), Series Volume 11974, p. 280-288, Springer International Publishing, ISBN: 978-3-030-40616-5, doi: 10.1007/978-3-030-40616-5, 2020.

32. A. D'Ippolito, A. Lauria, G. Alfonsi, F. Calomino. Investigation of flow resistance exerted by rigid emergent vegetation in open channel. ACTA GEOPHYSICA, vol. 67, p. 971-986, ISSN: 1895-6572, doi: 10.1007/s11600- 019-00280-8, 2019.
33. G. Alfonsi, D. Ferraro, A. Lauria, R. Gaudio. Large-eddy simulation of turbulent natural-bed flow. PHYSICS OF FLUIDS, vol. 31, p. 085105-1-085105-11, ISSN: 1070-6631, doi: 10.1063/1.5116522, 2019.
34. F. Aristodemo, A. Lauria, G. Tripepi, M. F. Rivera-Velasquéz, C. Fallico. Smoothing of Slug Tests for Laboratory Scale Aquifer Assessment—A Comparison Among Different Porous Media. WATER, vol. 11, ISSN: 2073-4441, doi: 10.3390/w11081569, 2019.
35. A. D'Ippolito, A. Lauria, G. Alfonsi, F. Calomino. Flow resistance in open channel with rigid emergent vegetation. Proc. of the 5 th IAHR Europe Congress - New Challenges in Hydraulic Research and Engineering Editor(s) Aronne Armanini and Elena Nucci doi: 10.3850/978-981-11-2731-1_225, 2018.
36. A. D'Ippolito, F. Calomino, G. Alfonsi, A. Lauria. Interazione fra vegetazione ripariale e corrente idrica: approcci ingegneristici tradizionali e sviluppi recenti. IV National Congress of Silviculture Torino, 5-9 Novembre 2018.
37. Francesco Calomino, Giancarlo Alfonsi, Roberto Gaudio, Antonino D'Ippolito, LAURIA, AGOSTINO, Ali Tafarojnoruz, Serena Artese (2018). Experimental and Numerical Study of Free-Surface Flows in a Corrugated Pipe. WATER, vol. 10, p. 1-23, ISSN: 2073-4441, doi: 10.3390/w10050638
38. Alfonsi G., Lauria A., Primavera L. (2017). Recent results from analysis of flow structures and energy modes induced by viscous wave around a surface-piercing cylinder. MATHEMATICAL PROBLEMS IN ENGINEERING, vol. 2017, p. 1- 10, ISSN: 1024-123X, doi: 10.1155/2017/5875948
39. Alfonsi G, Lauria A, Primavera L (2015). The field of flow structures generated by a wave of viscous fluid around vertical circular cylinder piercing the free surface. PROCEDIA ENGINEERING, vol. 116, p. 103-110, ISSN: 1877-7058, doi: 10.1016/j.proeng.2015.08.270
40. F. Calomino, A. Lauria. 3-D Underflow of a Sluice Gate at a Channel Inlet; Experimental Results and CFD Simulations. Journal of Civil Engineering and Urbanism, vol. 4(5), ISSN: 2252-0430, 2014
41. F. Calomino, A. Lauria. MOTO ALL'IMBOCCO DI UN CANALE RETTANGOLARE CONTROLLATO DA PARATOIA PIANA. Analisi sperimentale e modellazione numerica 3D. L'ACQUA, vol. 3, ISSN: 1125-1255, 2013

42. G. Alfonsi, A. Lauria, L. Primavera. Proper orthogonal flow modes in the viscous-fluid wave-diffraction case. JOURNAL OF FLOW VISUALIZATION AND IMAGE PROCESSING, vol. 20, p. 227-241, ISSN: 1065-3090, doi: 10.1615/JFlowVisImageProc.2015013508, 2013.
43. G. Alfonsi, A. Lauria, L. Primavera. On evaluation of wave forces and runups on cylindrical obstacles. JOURNAL OF FLOW VISUALIZATION AND IMAGE PROCESSING, vol. 20, p. 269-291, ISSN: 1065-3090, 2013.
44. G. Alfonsi, A. Lauria, L. Primavera. A study of vortical structures past the lower portion of the Ahmed car model. JOURNAL OF FLOW VISUALIZATION AND IMAGE PROCESSING, vol. 19, p. 81-95, ISSN: 1065-3090, doi: 10.1615/JFlowVisImageProc.2012005379, 2012.
45. G. Alfonsi, A. Lauria, L. Primavera. Structures of a viscous-wave flow around a large-diameter circular cylinder. JOURNAL OF FLOW VISUALIZATION AND IMAGE PROCESSING, vol. 19, p. 323-354, ISSN: 1065-3090, doi: 10.1615/JFlowVisImageProc.2014010739, 2012.
46. G. Alfonsi, A. Lauria, L. Primavera. Flow structures around a large-diameter circular cylinder. JOURNAL OF FLOW VISUALIZATION AND IMAGE PROCESSING, vol. 19, p. 15-35, ISSN: 1065- 3090, doi: 10.1615/JFlowVisImageProc.2012005088, 2012.
47. G. Alfonsi, A. Lauria, L. Primavera. WAVE-FIELD FLOW STRUCTURES DEVELOPING AROUND LARGE-DIAMETER VERTICAL CIRCULAR CYLINDER. In: Proceedings of the Sixth International Conference on Asian and Pacific Coasts (APAC 2011) December 14 – 16, 2011, Hong Kong, China. p. 773-780, ISBN: 978-981436648-9, doi: 10.1142/9789814366489_0091, 2011.
48. F. Calomino, A. Lauria, A. Miglio, G. Palma. Determinazione sperimentale dei coefficienti d'efflusso da paratoie con diversa inclinazione per casse d' espansione. Atti del convegno "XXX corso d'aggiornamento "Tecniche per la difesa dall'inquinamento", Nuova BIOS, 2009, pp. 261-290.
49. F. Calomino, A. Lauria , A. Miglio, G. Palma. Discharge coefficients for sluice gate in weirs. Atti del convegno "32nd Congress of IAHR", 1-6 Luglio 2007, Venezia, Italy.
50. F. Calomino, A. Miglio, G. Palma, A. Lauria. Determinazione sperimentale dei coefficienti d'efflusso da paratoie per casse di espansione. Atti del convegno 28° Corso di aggiornamento "Tecniche per la difesa dall'inquinamento", 20 – 23 Giugno 2007, Cosenza, Italy.

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