

# Curriculum Vitae

Name: Rui Jorge Ferreira Aleixo

Professional Address:

Email:

## Work Experience

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2020-Present: Researcher. CERIS, IST-ID. University of Lisboa. Portugal.

2017-2019: Researcher. University of Bologna. Italy.

2015-2016: Researcher. GHT-Photonics. Padova. Italy.

2014-2015: Researcher. Instituto Superior Técnico. Universidade de Lisboa. Portugal.

2013-2014: Visiting Scholar. National Center for Computational Hydroscience and Engineering. University of Mississippi, USA.

2008-2012: PhD Student. Université catholique de Louvain. Belgium.

2005-2008: Research Assistant. Hydraulics and Environment Division. University of Porto. Portugal.

2002-2004: Research Assistant. Hydraulics and Environment Division. University of Porto. Portugal.

2000-2001: Research Assistant at Instituto de Ciências da Terra e do Espaço. Portugal.

1999: Trainee at Applied Dynamic Division at National Laboratory of Civil Engineering (LNEC).  
Lisbon. Portugal.

## Education & Qualifications

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2008-2013: PhD in Engineering Sciences. Université catholique de Louvain. Louvain-la-Neuve. Belgium.

2007: Master in Fundamentals and Applications of Fluid Mechanics. Universidade do Porto. Portugal.  
Classification: Very Good.

2004-2005: Diploma Course. Von Kármán Institute, Rhode.Saint-Genèse, Belgium.

2001-2003: Post-graduation Course in Fluid Mechanics. Universidade do Porto. Portugal. Classification:  
Very Good.

1995-2001: Physics Engineering. Universidade de Lisboa. Portugal. Classification: 16/20.

## Programming Skills

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MATLAB (since 2001)

Fortran (since 1995)

C/C++ (since 1997)

Python (since 2009)

## IT Skills

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Windows, Linux

LaTeX

MS Office suite

EPANET, HEC-RAS

## Teaching Experience

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2016-2021: Lecturer in the W.A.T.E.R. Summer School of courses on (i) Hydraulic Measurements; (ii) Particle Tracking Velocimetry and (iii) Data Processing and Visualization

2011-2012: Teaching assistant. Université catholique de Louvain. Louvain-la-Neuve. Belgium. In charge of preparing the exercises courses in Hydraulics, laboratory courses and the practical part of the final exams.

## Publications with peer-reviewing

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**R. Aleixo**, S. Soares-Frazão and Y. Zech. (2011). *Velocity field measurements in a dam-break flow using a PTV Voronoï imaging technique*. Experiments in Fluids, 6, pp. 1633-1649. DOI: 10.1007/s00348-010-1021-y.

L. Mendes, F. Antico, P. Sanches, F. Alegria, **R. Aleixo** and R.M.L Ferreira. (2016). *A particle counting system for calculation of bedload fluxes*. Measurement Science and Technology 27(12):125305.

M. Jahabanzhi, I. Özgen, **R. Aleixo** and R. Hinkelmann (2017). *Development of a diffusive wave shallow water model with a novel stability condition and new features*. Journal of Hydroinformatics, 19 (3) 405-425.

**R. Aleixo**, S. Soares-Frazão and Y. Zech (2018). *Statistical analysis methods for transient flows – the dam-break case*, Journal of Hydraulic Research. DOI:10.1080/00221686.2018.1516700.

L. Sá Machado, M.M.C. Lima, **R. Aleixo** and E. Carvalho (2019). *Effect of the ski jump bucket angle on the scour hole downstream of a converging stepped spillway* International Journal of River Basin Management, DOI: 10.1080/15715124.2019.1586717.

**R. Aleixo**, F. Antico, A. M. Ricardo, R.M.L. Ferreira (2020). *Kinematics of Particles at Entrainment and Disentrainment*. Water 12(8):2110. DOI: 10.3390/w12082110.

S. Conevski, **R. Aleixo**, M. Guerrero, N. Rüther (2020). *Bedload Velocity and Backscattering Strength from Mobile Sediment Bed: A Laboratory Investigation Comparing Bistatic Versus Monostatic Acoustic Configuration*. Water 12(3318):1-25. DOI: 10.3390/w12123318.

R. B. Santos, M.M.C. Lima, E. Carvalho, **R. Aleixo** (2021). *Time evolution of the scour induced by a ski jump jet*. Journal of Applied Water Engineering and Research. DOI: 10.1080/23249676.2021.1919226

## Book (as editor)

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**R. Aleixo** (editor), Proceedings of the 1<sup>st</sup> International Symposium and Exhibition on Hydro-Environment Sensors and Software - HydroSenSoft 2017, February 28<sup>th</sup> - March 3<sup>rd</sup>, 2017, IFEMA, Madrid, Spain. ISBN: 978-90-824846-2-5

## Book chapters

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**R. Aleixo**, Y. Ozeren and M. Altinakar (2016). PIV-PTV measurements of a tailings dam-break flow. *Hydrodynamic and Mass Transport at Freshwater Aquatic Interfaces*. Springer - GeoPlanet: Earth and Planetary Sciences. ISBN: 9783319277493

R. Ferreira, **R. Aleixo** (2017). Laser Doppler Velocimetry/Anemometry. *Experimental Hydraulics: Methods, Instrumentation, Data Processing and Management, 2 volume set*, volume 2: Instrumentation and Measurement Techniques; edited by M. Muste, J. Aberle, D. Admiraal, R. Ettema, M. H. Garcia, D. Lyn, V. Nikora, C. Rennie. Taylor and Francis. ISBN: 978-1-138-03815-8 (to be published by Taylor & Francis in July 2017).

M.M.C. Lima, E. Carvalho and **R. Aleixo** (2018) LDV Measurements of the Flow Induced by an Elongated Bridge Pier: The Fixed Bed Case. In: Kalinowska M., Mrokowska M., Rowiński P. (eds) *Free Surface Flows and Transport Processes*. GeoPlanet: Earth and Planetary Sciences. Springer.

## Conference Papers

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**R. Aleixo**, E. Carvalho, M.M.L. Lima, R. Ferreira (2019). *PIV-PTV measurements of water and sediment flows*. HydroSenSoft 2019, 26 February – 1 March, Madrid, Spain.

M. Guerrero, **R. Aleixo**, N. Ruther (2019). *The long-term monitoring of suspended sediment transport with side-looking acoustic Doppler Current profilers: a graphical user interface for echo profiles interpretation*. HydroSenSoft 2019, 26 February – 1 March, Madrid, Spain.

M. Guerrero, **R. Aleixo**, N. Ruther (2018). River sediment transport monitoring by means of H-ADCP. Presented in the Workshop Sediment management in channel networks: from measurements to best practices, Faculty of Science and Technology, 8-9 November, Bozen, Italy.

- M. Guerrero, **R. Aleixo**, N. Ruther (2018). River sediment transport monitoring by means of H-ADCP. Presented in the Teledyne Marine Technology Workshop, 9 –11 October, Cannes, France
- N. Ruther, **R. Aleixo**, M. Guerrero (2018). Assessing the suspended sediment concentration by means of a side looking (horizontal) ADCP. In e-proceedings of 6th Particles in Europe Conference (PiE 2018), 14-17 October, Lisbon, Portugal.
- R. Aleixo**, M. Guerrero, N. Ruther (2018). *Assessing the suspended sediment concentration by means of acoustic Doppler echo profiling*, IDRA 2018 XXXVI Convegno Nazionale di Idraulica e Costruzioni Idrauliche, Ancona, 12<sup>th</sup> – 14<sup>th</sup> September.
- R. Aleixo**, M. Guerrero, N. Ruther, S. Stokseth (2018). *Development of a method for suspended sediment transport monitoring by means of ADCP measurements*. River Flow 2018, 5<sup>th</sup>-8<sup>th</sup> September 2018, Lyon France.
- R. Aleixo**, M. Guerrero, N. Ruther, S. Stokseth (2018). *Development of a method for suspended sediment transport monitoring by means of ADCP measurements*. River Flow 2018, 5<sup>th</sup>-8<sup>th</sup> September 2018, Lyon France.
- N. Ruther, **R. Aleixo**, M. Guerrero, S. Soras (2018). *Establishment of a rating curve for suspended sediment transport by means of ADCP measurements*. River Flow 2018, 5<sup>th</sup>-8<sup>th</sup> September, Lyon France.
- L. Carvalho, E. Carvalho, **R. Aleixo** and M. M. C. L. Lima (2018). *Experimental study of the bed morphology downstream of a sluice gate*. River Flow 2018, 5<sup>th</sup>-8<sup>th</sup> September 2018, Lyon France.
- F. Antico, L. Mendes, **R. Aleixo**, and R. M. L. Ferreira (2017). *Pressure-based impact method to count bedload particles*. Proceedings of the European Geophysical Union, 23<sup>rd</sup> – 28<sup>th</sup> April, Vienna, Austria.
- A. Radice, **R. Aleixo**, S.A.H. Sadabadi and S. Sarkar (2017). On image grabbing and processing for measurement of geophysical flows. Proceedings of the 1st International Symposium and Exhibition on Hydro-Environment Sensors and Software - HydroSenSoft 2017, February 28<sup>th</sup> - March 3<sup>rd</sup>, 2017, IFEMA, Madrid, Spain.
- L. Mendes, F. Antico, D. Carona. **R. Aleixo**, R. M.L. Ferreira (2017). A pressure-based impact and PTV methods evaluation for bedload transport measurements. Proceedings of the 1st International Symposium and Exhibition on Hydro-Environment Sensors and Software - HydroSenSoft 2017, February 28<sup>th</sup> - March 3<sup>rd</sup>, 2017, IFEMA, Madrid, Spain.
- F. Antico, P. Sanches, L. Mendes, **R. Aleixo**, F. Alegria and R.M.L. Ferreira. (2016). *A particle counter prototype and video imaging techniques for calculation of bedload fluxes*. International Symposium on River Sedimentation 2016, Stuttgart, Germany.
- R. Aleixo**, E. Carvalho and R.M.L. Ferreira. (2016). *A Toolbox for Laser Doppler Velocimetry Data Post-Processing*. Proc. Int. Conf. on Fluvial Hydraulics, River Flow 2016, St. Louis, Missouri, USA.
- F. Antico, P. Sanches, I. Fent, **R. Aleixo**, and R.M.L. Ferreira. (2016). Experimental study on sediment particles at entrainment and deposition. Proc. Int. Conf. on Fluvial Hydraulics, River Flow, 920-926.
- R. Aleixo**, S. Soares-Frazão and Y. Zech. (2016). *Before the dam breaks: Analysis of the flow behind a downward moving gate*. P Proc. Int. Conf. on Fluvial Hydraulics, River Flow 2016, St. Louis, Missouri, USA.

R.M.L. Ferreira, F. Antico, P. Sanches and **R. Aleixo**. (2015). *Kinematics of entrainment and deposition of granular material in turbulent flows*. YMC M.S. Yalin Memorial Colloquium 2015 Fundamental river processes and Connection between fluvial and coastal systems in a changing climate 19<sup>th</sup> - 20<sup>th</sup> November, 2015 Palermo, Italy.

**R. Aleixo**, L. Mendes, F. Antico, P. Sanches, F. Alegria and R.M.L. Ferreira. (2015). *Assessment of video imaging and particle counting techniques for calculation of bedload fluxes*. E-proceedings of the 36th IAHR World Congress, 28<sup>th</sup> June – 3<sup>rd</sup> July, The Hague, The Netherlands.

**R. Aleixo**, Y. Ozeren and M. Altinakar. (2015). *PIV-PTV measurements of a tailings dam-break flow*. XXXIV International School of Hydraulics, 11<sup>th</sup> – 14<sup>th</sup> May, Zéléchow, Poland.

**R. Aleixo** and M. Altinakar. (2015). *Tailings dam-break flow - Analysis of sediment transport*. Proceedings of the European Geophysical Union, 12<sup>th</sup> – 17<sup>th</sup> April, Vienna, Austria.

F. Antico, P. Sanches, **R. Aleixo** and R.M.L. Ferreira. (2015). *Kinematics of flow and sediment particles at entrainment and deposition*. Proceedings of the European Geophysical Union, 12<sup>th</sup> – 17<sup>th</sup> April, Vienna, Austria.

E. Carvalho and **R. Aleixo**. (2014). *Quadrant method application to the study of the beginning of sediment motion of sedimentary particles*. V Conferência Nacional de Mecânica dos Fluidos, Termodinâmica e Energia - MEFTE 2014, 11<sup>th</sup> – 12<sup>th</sup> September, Porto, Portugal.

**R. Aleixo**, Y. Ozeren and M. Altinakar. (2014). *Tailings Dam-Break Flow Analysis by Means of a Combined PIV-PTV Tool*. Proceedings of the River Flow 2014, 3<sup>rd</sup> – 5<sup>th</sup> September, Lausanne. Switzerland.

E. Carvalho, R. Maia, **R. Aleixo** and R. Ferreira. (2014). *Experimental Characterization of the Near-Wall Turbulence in Rough Supercritical Flows*. Proceedings of the River Flow 2014, 3<sup>rd</sup> – 5<sup>th</sup> September, Lausanne. Switzerland.

Y. Ozeren, **R. Aleixo**, M. Altinakar and D. Wren. (2014). *Laboratory Experiments on Dam-break Flow of Water-Sediment Mixtures*. Proceedings of the River Flow 2014, 3<sup>rd</sup> – 5<sup>th</sup> September, Lausanne. Switzerland. Lausanne. Switzerland.

**R. Aleixo**, Y. Ozeren, M. Altinakar and D. Wren. (2014). *Velocity Field Measurements in Tailings Dam Failure Experiments Using a Combined PIV-PTV Approach*. 3<sup>rd</sup> European IAHR Conference. Porto, Portugal.

E. Carvalho, R. Maia and **R. Aleixo**. (2014). *An Experimental Study of the Turbulent Events over a Loose Particle Under Supercritical Flow Conditions*. Proceedings of the 3<sup>rd</sup> European IAHR Conference. Porto, Portugal.

**R. Aleixo**, Y. Ozeren and M. Altinakar. (2013). *Velocity Measurements in Tailing Dams*. Proceedings of the Mid-South Annual Engineering and Sciences Conference MAESC 2013. 28<sup>th</sup> – 29<sup>th</sup> October, Oxford, Mississippi, USA.

**R. Aleixo**, S. Soares-Frazão, M. Altinakar and Y. Zech. (2013). *The Gate Removal Effect in the Initial Instants of the Dam-break Flow*. 35th World Congress International Association of Hydraulic Engineering and Research, Chengdu, China.

**R. Aleixo**, Y. Zech and S. Soares-Frazão. (2012). *Turbulence measurements in dam-break flows*. Proceedings of the River Flow 2012 Conference, R. E. Murillo Munoz (ed.). San Jose, Costa Rica.

- R. Aleixo**, Y. Zech and S. Soares-Frazão. (2012). *Detailed Measurements of a Dam-Break Flow. Numerical Simulation with Fluent*. Proceedings of the 2<sup>nd</sup> European IAHR Conference. Munchen, Germany.
- R. Aleixo**, Y. Zech and S. Soares-Frazão. (2012). *Medições em Escoamentos Transitórios por Técnicas de Aquisição e Processamento de Imagem - O caso do escoamento consecutivo a uma ruptura de barragem*. 11<sup>o</sup> Congresso da Água. Porto, Portugal (in Portuguese).
- B. Spinewine, **R. Aleixo** and H. Capart. (2011). *Intense bedload associated with unsteady dam-break surges*. Proceedings River, Coastal and Estuarine Morphodynamics: RCEM 2011, Beijing, China. Tsinghua University Press, Beijing.
- C. Swartenbroekx, S. Soares-Frazão, **R. Aleixo** and Y. Zech. (2011). *Dam-break flows over mobile bed: comparison between PIV measurements and a 2-layer shallow-water model*. Proceedings River, Coastal and Estuarine Morphodynamics: RCEM 2011, Beijing, China, Tsinghua University Press, Beijing.
- R. Aleixo**. (2011). *Time Resolved PIV Analysis of the Initial Stages of the Dam Break*. 34th IAHR Conference. Brisbane, Australia.
- R. Aleixo**, B. Spinewine, S. Soares-Frazão and Y. Zech. (2010). *Velocity profiles in dam-break flows: Water and sediment layers*. River Flow 2010 Conference, A. Dittrich, K. Koll, J. Aberle, P. Geisenhainer (Eds). Braunschweig, Germany.
- R. Aleixo**, S. Soares-Frazão and Y. Zech. (2010). *Transient Flow Analysis by Imaging Methods - Voronoï Particle Tracking Velocimetry Applied to the Dam-break Flow*. 5<sup>th</sup> ECCOMAS-CFD European Conference on Computational Fluid Mechanics. Lisbon, Portugal.
- R. Aleixo**, B. Spinewine, S. Soares-Frazão and Y. Zech. (2009). *Non-intrusive measurements of water surface and velocity profiles in a dam-break flow*. 33<sup>th</sup> IAHR Conference. Vancouver, Canada.
- R. Aleixo** and M.F. Proença. (2007). *Measurement of the trajectory of a free jet using imaging techniques (Medição da trajetória de um jacto livre usando aquisição de imagens)*. 2as Jornadas de Hidráulica Recursos Hídricos e Ambiente. Faculdade de Engenharia da Universidade do Porto. FEUP, ISBN 978-989-95557-1-6 (in Portuguese).
- R. Aleixo** and R. Maia. (2006). *The Beginning of Sediment Transport - A Different Approach*. Proceedings of the River Flow 2006 Conference, Rui M.L. Ferreira, Elsa C.T.L. Alves, Joao G.A.B. Leal, Antonio H. Cardoso (Eds). Lisbon, Portugal.

## Thesis

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2013: Experimental study of the early stages of a dam-break flow over fixed and mobile beds. Université catholique de Louvain. Belgium

2007: Estudos de sedimentação e transporte empregando novas técnicas analíticas e experimentais (Studies on sedimentation and transport using new analytical and experimental techniques). Master Thesis Universidade do Porto. Portugal.

## Divulcation & Outreach

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**R. Aleixo**, L. Mendes, F. Antico and R. M.L. Ferreira (2017). *MiCas: from pressure signals to counting bedload particles*. IAHR Hydrolink 1/2017. ISSN: 1388-3445.

**R. Aleixo** (2017). *HydroSenSoft: A New Conference Aimed to Bridge the Gap Between Academia and Industry*. IAHR Hydrolink 4/2017. ISSN: 1388-3445.

A. Radice, **R. Aleixo** and R. Ferreira (2017). *Experimental Hydraulics and the Sustainable Development Goals*. IAHR Hydrolink 4/2017. ISSN: 1388-3445.

## Talks & Communications

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2018-11-23: *Light and Sound – Measurement techniques in hydraulics*, Department of Civil and Environmental Engineering, Faculty of Engineering, NTNU, Norway.

2018-02-21: *Imaging methods in hydraulics: Examples of Applications*, Faculty of Engineering, University of Bologna.

2015-10-02: *Data presentation and visualization*. 5th Summer School of Hytech Project, Castelfranco Veneto, Italy.

2015-09-26: *Notes on Particle Tracking Velocimetry*. 5th Summer School of Hytech Project, Castelfranco Veneto, Italy.

2015-07-28: *Notes on Particle Tracking Velocimetry*. Summer school on measuring techniques for turbulent open channel flows. Instituto Superior Técnico - Universidade de Lisboa.

2015-05 *Fiber-optic sensors in fluvial hydraulics*. 4th Summer School of Hytech Project Meeting. Zéléchow, Poland.

2014-05-27: *Experiments on Tailings Dam Failures - Velocity Measurement Techniques*. Joint Seminar National Center for Computational Hydrosiences and Engineering - National Sedimentation Laboratory, University of Mississippi, USA.

2013-04-05: *Velocity Measurements in Dam-Break Flows – The Initial Stages*. National Center for Computational Hydrosiences and Engineering, University of Mississippi, USA.

## Measurement Techniques Skills

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LDV - Laser Doppler Velocimetry (since 2001).

PIV - Particle Image Velocimetry (since 2004).

PTV - Particle Tracking Velocimetry (since 2004).

UVP – Ultrasonic Velocity Profile meter (since 2009).

## Language Skills

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Portuguese (Mother language).

English (Level C2).

French (Level C1).

Italian (Level B2).

Esperanto (Level B2).

## Reviewer

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Reviewer for the following scientific journals: Journal of Hydraulics Research, Journal of Hydraulics Engineering and Water Resources Research


## Organizations membership and roles

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Chair of International Association of Hydraulic Research (IAHR) Experimental Methods and Instrumentation Committee (2015-2017).

Vice-chair of International Association of Hydraulic Research (IAHR) Experimental Methods and Instrumentation Committee (2013-2015).

Member of the steering committee of the conference HydroSenSoft 

Member of the Organizing Committee of MEFTE 2014 Conference (Fluid Mechanics, Thermodynamics and Engineering Conference, Portugal): 

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