

Publications

Florent Ravelet – 30 mars 2023

Articles in peer-reviewed journals

- ACL-45 M. Bourhis, M. Pereira and **F. Ravelet**. *Experimental investigation of the effects of the Reynolds number on the performance and near wake of a wind turbine*. Renewable Energy, In press (2023). <https://doi.org/10.1016/j.renene.2023.03.093>
- ACL-44 M. Bourhis, M. Pereira and **F. Ravelet**. *Performance and flow characteristics of the optimum rotors of Betz, Joukowsky and Glauert at low tip-speed ratio*. Physics of Fluids **34**, 105105 (2022).
- ACL-43 M. Deligant, M. Huebel, T.-N. Djaname, **F. Ravelet**, M. Specklin and M. Kebdani. *Design and off-design system simulation of concentrated solar super-critical CO₂ cycle integrating a radial turbine meanline model*. Energy Reports **8**, 1381 (2022).
- ACL-42 M. Bourhis, M. Pereira and **F. Ravelet**. *Experimental investigation of the effect of blade solidity on micro-scale and low tip-speed ratio wind turbines*. Experimental Thermal and Fluid Science **140**, 110745 (2022).
- ACL-41 A. Larabi, M. Pereira, **F. Ravelet**, T. Azzam, H. Oualli, L. Menfoukh and F. Bakir. *Numerical Investigation of Parietal Pressure Distribution on NACA0012 Wing Controlled by Micro-cylindrical Rod Arranged in Tandem*. Progress in Computational Fluid Dynamics, In press, (2022). <https://dx.doi.org/10.1504/PCFD.2022.10051919>
- ACL-40 M. Bourhis, M. Pereira, **F. Ravelet** and I. Dobrev. *Innovative design method and experimental investigation of a small-scale and very low tip-speed ratio wind turbine*. Experimental Thermal and Fluid Science **130**, 110504 (2022).
- ACL-39 V.-T. Nguyen, C. B. Abed, A. Danlos, **F. Ravelet**, R. Paridaens, M. Deligant, S. Khelladi and F. Bakir. *Experimental Study of a Novel Centrifugal Compressor With Two Successive and Independent Rotors*. Journal of Engineering for Gas Turbines and Power **144**, 011005 (2022).
- ACL-38 V.-T. Nguyen, A. Danlos, **F. Ravelet**, M. Deligant, M. Solis, S. Khelladi and F. Bakir. *Numerical Analysis of a Novel Twin-impeller Centrifugal Compressor*. Computation **9**, 143 (2021).
- ACL-37 M. Zaresharif, **F. Ravelet**, D. J. Kinahan and Y. M. C. Delaure. *Cavitation control using passive flow control techniques*. Physics of Fluids **33**, 121301 (2021).
- ACL-36 M. Pereira, **F. Ravelet**, K. Azzouz, T. Azzam, H. Oualli, S. Kouidri and F. Bakir. *Improved Aerodynamics of a Hollow-Blade Axial Flow Fan by Controlling the Leakage Flow Rate by Air Injection at the Rotating Shroud*. Entropy **23**, 877 (2021).
- ACL-35 T. Magne, R. Paridaens, **F. Ravelet**, S. Khelladi, F. Bakir, P. Tomov and L. Pora. *Effect of gas content on the cavitating and non-cavitating performance of an axial three-bladed inducer*. Multiphase Science and Technology **32**, 81 (2020).
- ACL-34 **F. Ravelet**, A. Danlos, F. Bakir, K. Croci, S. Khelladi and C. Sarraf. *Development of Attached Cavitation at Very Low Reynolds Numbers From Partial to Super-Cavitation*. Applied Sciences **10**, 7350 (2020).

- ACL-33 S. T. W. Kuruneru, E. Marechal, M. Deligant, S. Khelladi, **F. Ravelet**, S. Ch. Saha, E. Sauret and Y. Gu. *A Comparative Study of Mixed Resolved–Unresolved CFD-DEM and Unresolved CFD-DEM Methods for the Solution of Particle-Laden Liquid Flows*. Archives of Computational Methods in Engineering **26**, 1239 (2019).
- ACL-32 K. Croci, **F. Ravelet**, A. Danlos, J.-C. Robinet and L. Barast. *Attached cavitation in laminar separations within a transition to unsteadiness*. Phys. Fluids **31**, 063605 (2019).
- ACL-31 K. Sodjavi, **F. Ravelet**, and F. Bakir. *Effects of axial rectangular groove on turbulent Taylor-Couette flow from analysis of experimental data*. Exp. Thermal Fluid Sci. **97**, 270 (2018).
- ACL-30 **F. Ravelet**, F. Bakir, C. Sarraf and J. Wang. *Experimental investigation on the effect of load distribution on the performances of a counter-rotating axial-flow fan*. Exp. Thermal Fluid Sci. **96**, 101 (2018).
- ACL-29 T. Azzam, R. Paridaens, **F. Ravelet**, S. Khelladi, H. Oualli and F. Bakir. *Experimental investigation of an actively controlled automotive cooling fan using steady air injection in the leakage gap*. Proc. Inst. Mech. Eng., Part A : Journal of Power and Energy **231**, 59 (2017).
- ACL-28 P. Tomov, S. Khelladi, **F. Ravelet**, C. Sarraf, F. Bakir and P. Vertenoeuil. *Experimental study of aerated cavitation in a horizontal venturi nozzle*. Exp. Thermal Fluid Sci. **70**, 85 (2016).
- ACL-27 J. Wang, **F. Ravelet** and F. Bakir. *Performance gains provided by the use of a counter-rotating axial-flow fan with respect to a conventional rotor-stator stage*. Journal of energy and power sources **2**, 9 (2015).
- ACL-26 A. Danlos, **F. Ravelet**, O. Coutier-Delgosha, and F. Bakir. *Cavitation regime detection through Proper Orthogonal Decomposition : dynamics analysis of the sheet cavity on a grooved convergent-divergent nozzle*. Int. J. Heat and Fluid Flow **47**, 9 (2014).
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- ACL-24 B. Saint-Michel, B. Dubrulle, L. Marié, **F. Ravelet**, and F. Daviaud. *Influence of Reynolds number and forcing type in a turbulent von Karman flow*. New J. Phys. **16**, 063037 (2014).
- ACL-23 H. Nouri, **F. Ravelet** and F. Bakir. *Etude expérimentale de l'écoulement et de l'interaction entre deux rotors contrarotatifs subsoniques*. La Houille Blanche **2014-3**, 16 (2014).
- ACL-22 H. Nouri, A. Danlos, **F. Ravelet**, F. Bakir, and C. Sarraf. *Experimental study of the instationary flow between two ducted Counter-rotating rotors*. J. Eng. Gas Turb. Power **135**, 022601 (2013).
- ACL-21 **F. Ravelet**, F. Bakir, S. Khelladi, and R. Rey. *Experimental study of hydraulic transport of large particles in horizontal pipes*. Exp. Thermal Fluid Sci. **45**, 187 (2013).
- ACL-20 A. Zaaraoui, **F. Ravelet**, F. Margnat, and S. Khelladi. *High Accuracy Volume Flow Rate Measurement Using Vortex Counting*. Flow Meas. Inst. **33**, 138 (2013).
- ACL-19 B. Saint-Michel, B. Dubrulle, L. Marié, **F. Ravelet**, and F. Daviaud. *Evidence for Forcing-Dependent Steady States in a Turbulent Swirling Flow*. Phys. Rev. Lett. **111**, 234502 (2013).
- ACL-18 **F. Ravelet**, B. Dubrulle, F. Daviaud and P.-A. Ratié. *Kinematic Alpha Tensors and dynamo mechanisms in a von Kármán swirling flow*. Phys. Rev. Lett. **109**, 024503 (2012).
- ACL-17 H. Nouri, **F. Ravelet**, F. Bakir, C. Sarraf, and R. Rey. *Design and Experimental Validation of a Ducted Counter-Rotating Axial-Flow Fans System*. J. Fluids Eng. **134**, 104504 (2012).

- ACL-16 **F. Ravelet**, C. Colin and F. Risso. *On the dynamics and breakup of a bubble rising in a turbulent flow*. Phys. Fluids **23**, 103301 (2011).
- ACL-15 C. Sarraf, **F. Ravelet**, H. Nouri and F. Bakir. *Experimental study of blade thickness effects on the overall and local performances of a Controlled Vortex Designed axial-flow fan*. Exp. Thermal Fluid Sci. **35**, 684 (2011).
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- ACL-12 VKS Collaboration. *The von Kármán Sodium experiment : Turbulent dynamical dynamos*. Phys. Fluids **21**, 035108 (2009).
- ACL-11 M. Rodriguez Pascual, **F. Ravelet**, R. Delfos, J. J. Derksen and G. J. Witkamp. *Large eddy simulations and stereoscopic particle image velocimetry measurements in a scraped heat exchanger crystallizer geometry*. Chem. Eng. Science **64**, 2127 (2009).
- ACL-10 VKS Collaboration. *The VKS experiment : turbulent dynamical dynamos*. Comptes Rendus Physique **9**, 689 (2008).
- ACL-9 VKS Collaboration. *Chaotic Dynamos Generated by a Turbulent Flow of Liquid Sodium*. Phys. Rev. Lett. **101**, 074502 (2008).
- ACL-8 **F. Ravelet**, A. Chiffaudel and F. Daviaud. *Supercritical transition to turbulence in an inertially-driven von Kármán closed flow*. J. Fluid Mech. **601**, 339 (2008).
- ACL-7 VKS Collaboration. *Magnetic field reversals in an experimental turbulent dynamo*. Eur. Phys. Letters. **77**, 59001 (2007).
- ACL-6 VKS Collaboration. *Generation of magnetic field by dynamo action in a turbulent flow of liquid sodium*. Phys. Rev. Lett. **98**, 044502 (2007).
- ACL-5 VKS Collaboration. *Transport of magnetic field by a turbulent flow of liquid sodium*. Phys. Rev. Lett. **97**, 074501 (2006).
- ACL-4 F. Stefani, M. Xu, G. Gerbeth, **F. Ravelet**, A. Chiffaudel, F. Daviaud and J. Léorat. *Ambivalent effects of added layers on steady kinematic dynamos in cylindrical geometry : application to the VKS experiment*. Eur. J. Mech. B, **25**, 894 (2006).
- ACL-3 R. Monchaux, **F. Ravelet**, B. Dubrulle, A. Chiffaudel and F. Daviaud. *Properties of Steady States in Turbulent Axisymmetric Flows*. Phys. Rev. Lett. **96**, 124502 (2006).
- ACL-2 **F. Ravelet**, A. Chiffaudel, F. Daviaud and J. Léorat. *Towards a von Kármán dynamo : numerical studies based on experimental flows*. Phys. Fluids **17**, 117104 (2005).
- ACL-1 **F. Ravelet**, L. Marié, A. Chiffaudel and F. Daviaud. *Multistability and memory effect in a highly turbulent flow : Experimental evidence for a global bifurcation*. Phys. Rev. Lett. **93**, 164501 (2004).

Conference proceedings

- COF-39 M. Bourhis, M. Pereira, **F. Ravelet**, *Experimental investigation of the effect of the Reynolds number on the performance of a micro-scale and low tip-speed ratio wind turbine*. 16th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2022), Amsterdam, Netherlands.
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- COF-38 A. Larabi, M. Pereira, **F. Ravelet**, T. Azzam, T. Ait-Ali, H. Oualli and F. Bakir, *Experimental and Numerical study on Aerodynamics of Aerofoils at Low Reynolds Number Controlled by Off-Surface Micro-Vortex Generators*. Congrès Français de Mécanique, 2022, Nantes, France.
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- COF-37 V. Gentis, M. Pereira, **F. Ravelet**, F. Bakir, L. Pora and P. Tomov, *Etude numérique des interactions entre un rouet centrifuge et un inducteur*. Congrès Français de Mécanique, 2022, Nantes, France.
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- COF-36 M. Bourhis, M. Pereira, **F. Ravelet** and I. Dobrev, *Numerical Assesment of a Small-Scale and Very Low Tip Speed Ratio Wind Turbine*. XIII International Conference on Computational Heat, Mass and Momentum Transfer (ICCHMT 2021), Paris, France.
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- COF-35 V.-T. Nguyen, A. Danlos, **F. Ravelet**, M. Deligant, M. Solis, S. Khelladi and F. Bakir, *CFD Analysis to explain the Operating range extension observed during Operation in Co-rotating Mode of a Twin-impeller Centrifugal Compressor*. XIII International Conference on Computational Heat, Mass and Momentum Transfer (ICCHMT 2021), Paris, France.
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- COF-34 A. Larabi, M. Pereira, **F. Ravelet**, T. Azzam, H. Oualli, L. Menfoukh and F. Bakir, *Numerical Study on the Effect of an Off-Surface Micro-Rod Vortex Generator Placed Upstream NACA0012 Aerofoil*. XIII International Conference on Computational Heat, Mass and Momentum Transfer (ICCHMT 2021), Paris, France.
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- COF-33 V.-D. Dang, A. Danlos, M. Pereira, M. Shirinbayan, **F. Ravelet**, F. Bakir and A. Tcharhktchi, *Effects of some settings of rotational-molding process on the aeromechanical performance of an axial fan*. 18th international symposium on transport phenomena and dynamics of rotating machinery, 2020, Honolulu, United States.
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- COF-32 V.-T. Nguyen, A. Danlos, R. Paridaens, **F. Ravelet**, M. Deligant, S. Khelladi and F. Bakir, *Experimental study of a centrifugal compressor with two successive and counter-rotating impellers*. 18th international symposium on transport phenomena and dynamics of rotating machinery, 2020, Honolulu, United States.
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- COF-31 **F. Ravelet**, A. Danlos, K. Croci and S. Khelladi, *Attached cavitation in a laminar separation bubble*. 18th international symposium on transport phenomena and dynamics of rotating machinery, 2020, Honolulu, United States.
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- COF-30 K. Croci, **F. Ravelet**, J.-C. Robinet and A. Danlos, *Experimental Study of Cavitation in Laminar Flow*. 10th International Cavitation Symposium, May 2018, Baltimore, United States.
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- COF-29 M. Younsi, B. Hutchinson, **F. Ravelet**, S. Khelladi and F. Bakir, *Numerical simulation of the unsteady aerodynamics in an axial counter-rotating fan stage*. 12th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT 2016), Jul 2016, Malaga, Spain.
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- COF-28 T. Azzam, R. Paridaens, **F. Ravelet**, S. Khelladi, H. Oualli and F. Bakir, *Experimental investigation of active control by steady air injection in the tip clearance gap of an axial fan*. International Symposium on Transport Phenomena and Dynamics of Rotating Machinery, Apr 2016, Honolulu, United States.
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- COF-27 K. Croci, P. Tomov, **F. Ravelet**, A. Danlos, S. Khelladi and J.-C. Robinet, *Investigation of two mechanisms governing cloud cavitation shedding : experimental study and numerical highlight*. Proceedings of the ASME 2016 International Mechanical Engineering Congress & Exposition IMECE 2016 November 11-17, 2016, Phoenix, USA. IMECE2016-65420
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- COF-26 P. Tomov, A. Danlos, S. Khelladi, **F. Ravelet**, C. Sarraf and F. Bakir, *POD study of aerated cavitation in a venturi nozzle*. 9th international symposium on cavitation, Dec 2015, Lausanne, Switzerland.
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- COF-23 J. Labib, **F. Ravelet** and F. Bakir, *Conception et étude numérique d'un ventilateur centrifuge soufflant dans l'entrefer d'un moteur électrique ultra-compact et ultra-rapide*. 22è Congrès Français de Mécanique, Aug 2015, Lyon, France.
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- COF-20 J. Wang, **F. Ravelet** and F. Bakir, *Experimental comparison between a counter-rotating axial-flow fan and a conventional rotor-stator stage*. ETC2013, 10th European Turbomachinery Conference, 15-19 April 2013, Lappeenranta, Finland.
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- COF-18 C. Sarraf, **F. Ravelet** and F. Bakir, *Étude expérimentale de l'influence du blocage aval sur les performances d'un ventilateur axial*. 21ème Congrès Français de Mécanique. Bordeaux, 26-30 août 2013, France.
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- COF-17 A. Danlos, **F. Ravelet** and F. Bakir, *Etude numérique des gains de performances et de capacité d'aspiration apportés par un étage axial contrarotatif par rapport à une pompe mono-rotor*. 21ème Congrès Français de Mécanique. Bordeaux, 26-30 août 2013, France.
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- COF-15 A. Danlos, J.-E. Mehal, **F. Ravelet** and C. Sarraf, *Study of Passive Control of the cavitation instability on a venturi profile*. CAV2012, 8th International Symposium on Cavitation, paper n° 240, 13-16 August 2012, Singapore.
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- COF-13 **F. Ravelet**, A. Lemaire and F. Bakir, *Etude expérimentale du transport hydraulique de grandes particules en conduite horizontale et en forme de S*. 20ème Congrès Français de Mécanique Besançon, 29 août-2 septembre 2011, France.
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- COF-12 C. Sarraf, **F. Ravelet**, H. Nouri and F. Bakir, *Effects of blades Thickness on the Aerodynamical and Acoustical Performances of Axial Fans*, 7th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, paper n° 1428, 19-21 July 2010, Antalya, Turkey.
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- COF-11 **F. Ravelet**, S. Khelladi, H. Nouri, F. Bakir, H. Kim, Y. Bae, Y. J. Moon, *Study of the Aerodynamics/Aeroacoustics of an Axial-Flow Fan : Experimental Validation of a LES/LPCE/Brinkman Penalization Method*, 16th AIAA/CEAS Aeroacoustics Conference, paper n° AIAA 2010-3869, 7-9 June 2010, Stockholm, Sweden.
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- COF-10 H. Nouri, **F. Ravelet**, C. Sarraf and F. Bakir, *Experimental study of the global and the local performances of thick blades axial-flow*. 3rd Joint US-European Fluids Engineering Summer Meeting, 22nd Symposium on Fluid Machinery, paper n° FEDSM-ICNMM2010-30623, 1-5 August 2010, Montreal, Canada.
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- COF-9 M. Solis, **F. Ravelet**, S. Khelladi and F. Bakir, *Experimental and numerical analysis of the flow inside a configuration including an axial pump and tubular exchanger*. 3rd Joint

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- COF-8 R. Delfos, **F. Ravelet** and J. Westerweel, *Scaling of torque in turbulent Taylor-Couette flow with background rotation*. Proceedings of the 12th European Turbulence Conference, p. 629 (Marburg, 7-10 September 2009).
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- COF-7 P.-P. Cortet, S. Atis, A. Chiffaudel, F. Daviaud, B. Dubrulle and **F. Ravelet**, *Experimental study of the von Kármán flow from $Re = 10^2$ to 10^6 : spontaneous symmetry breaking and turbulent bifurcations*. Proceedings of the 12th European Turbulence Conference, p. 59 (Marburg, 7-10 September 2009).
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- COF-6 M. Rodriguez, **F. Ravelet**, R. Delfos and G. J. Witkamp, *Measurement of flow field and wall temperature distribution in a scraped heat exchanger crystallizer*. Proceedings of the 5th Eurotherm Conference (Eindhoven, 18-22 May 2008).
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- COF-5 N. Abi Chebel, O. Masbernat, F. Risso, P. Guiraud, F. Ravelet, C. Dalmazzone and C. Noïk, *Imaging method for interface rheological characterization*, Proceedings of the 13th International Symposium on Flow Visualization (Nice, 1-4 July 2008).
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- COF-2 **F. Ravelet**, R. Delfos and J. Westerweel, *Emergence of large scale secondary flow in a turbulent Taylor-Couette flow*. Proceedings of the Turbulence and Shear Flow Phenomena (Munich, 27-29 August 2007).
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Communications

36. M. Bourhis, M. Pereira and **F. Ravelet**, *New design method for small scale and low tip-speed ratio wind turbines*. 10th edition JNRSE National Days on Energy Harvesting and Storage, 2-3 June 2021, organized by the CEA Grenoble and TIMA.
35. T. Magne, R. Paridaens, **F. Ravelet**, S. Khelladi and F. Bakir, *Effect of degassing phenomenon of the aviation fuel cavitation dynamics in a case of a three-bladed inducer*. AFM/SHF Conference on Hydraulic Machines and Cavitation November 6-7, 2019, Sion, Switzerland.
34. **F. Ravelet**, A. Danlos, K. Croci and S. Khelladi, *Cavitation dans un bulbe de décollement laminaire*. Journées SHF/AFM : Conference on Hydraulic Machines and Cavitation November 6-7, 2019, Sion, Switzerland.
33. K. Croci, **F. Ravelet**, J-C. Robinet and A. Danlos, *Etude Expérimentale de la Cavitation à Bas Nombre de Reynolds*. Journées SHF/AFM : Machines Hydrauliques et Cavitation 8 et 9 Novembre 2017, Paris, France.
32. J. Antoun and **F. Ravelet**, *Experimental and Numerical Investigation on the Torque in a Small Gap Taylor-Couette Flow with Smooth and Grooved Surface*. ICAMSE 2015 : International Conference on Aerospace and Mechanical Systems Engineering, July 25-26, 2015 London, United Kingdom.
31. P. Tomov, C. Sarraf, S. Khelladi, **F. Ravelet** and F. Bakir, *Experimental study of a horizontally aerated cavitating flow in a symmetrical venturi nozzle*, Journées SHF : Machines hydrauliques, Cavitation 3-4 Juin, 2015, Nantes, France.
30. A. Danlos, **F. Ravelet**, F. Bakir and O. Coutier-Delgosha, *Experimental analysis of the effect of a grooved Venturi profile on the cavitation regime*. SHF Conference on Hydraulic Machines and Cavitation/ Air in Water Pipes, Grenoble, France, June 5-6th, 2013.
29. A. Zaaraoui, F. Margnat, S. Khelladi, **F. Ravelet**, *Vortex shedding flowmeter. A strain gauge sensor and quadrangular section*. 15th International Conference on Experimental Mechanics, 22-27 July 2012. Porto, Portugal.
28. H. Nouri, **F. Ravelet**, F. Bakir and C. Sarraf, *Experimental investigation on ducted counter-rotating axial flow fans*. FAN2012, International Conference on Fan Noise, Technology and Numerical Methods, paper n° 38, 18-20 april 2012, Senlis, France.
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1. *Global bifurcation of the turbulent von Kármán flow*. Marburg-GIT-LadHyX PROCOPE Meeting, LadHyX-Ecole Polytechnique, Palaiseau, 13-14 novembre 2002.

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3. A. Chiffaudel, **F. Ravelet**, L. Marié and F. Daviaud. *Bifurcation turbulente et multistabilité d'un écoulement à très grand nombre de Reynolds*. Journée de Dynamique Non Linéaire, Marseille, 13 juin 2006.
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Seminars

10. A. Danlos & F. Ravelet, *Dynamique de la poche de cavitation développée sur un profil de venturi rainuré*. ENSTA, Palaiseau, 20 mars 2013.
9. *PIV stéréoscopique et tomographique dans un écoulement de Taylor-Couette Turbulent, transitions en fonction du rapport de rotation des cylindres*. Laboratoire Ondes et Milieux Complexes, UMR 6294 CNRS, Le Havre, 26 octobre 2012.
8. *Effet de la mise en rotation sur la structure de l'écoulement secondaire à grande échelle dans un écoulement de Taylor-Couette turbulent*. ENSTA, Palaiseau, 13 février 2008.
7. *La dynamique du champ magnétique terrestre reproduite au laboratoire : réalisation expérimentale de l'effet dynamo en écoulement turbulent*. IMFT, Toulouse, 9 janvier 2008.
6. *Effets du nombre de Reynolds et de la rotation globale sur la structure à grande échelle d'un écoulement de Taylor-Couette turbulent*. FAST, Orsay, 13 décembre 2007.
5. *Emergence of large scale secondary flow in a turbulent Taylor-Couette flow*. Komplexes Systeme (B. Eckhardt), Philipps Universität, Marburg, Allemagne, 06 septembre 2007.
4. *Multistabilité et bifurcations globales dans un écoulement très turbulent*. LEGI, Grenoble, 28 septembre 2006.
3. *Multistabilité et bifurcations globales dans un écoulement très turbulent. Expérience de laboratoire et observations géophysiques*. Séminaire à l'Ecole Normale Supérieure, Paris, 29 novembre 2005.
2. *Experimental evidence for a global bifurcation in a highly turbulent von Kármán flow*. Laboratory for aero and hydrodynamics, Delft University of Technology, Delft, Pays-Bas, 3 mars 2005.
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