

YVAN MACIEL

Mechanical Engineering Department, Laval University
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Membre of Ordre des ingénieurs du Québec as an Engineer.

RESEARCH INTERESTS

Fluid dynamics, experimental fluid dynamics, turbulence, control of turbulence, aerodynamics, hemodynamics (biofluid dynamics).

EDUCATION

- Doctoral degree** October 1994
École Nationale Supérieure de l'Aéronautique et de l'Espace (Sup'Aéro), Toulouse, France. Laboratoire ONERA/CERT.
Supervisors: Mr. Christian Gleyzes, Dr. Jean Cousteix
Mention Très Honorable avec Félicitations (Very Honorable Mention with Congratulations)
- Master of Science, Aeronautics** June 1990
California Institute of Technology, Pasadena, USA
- Bachelor of Engineering, Honours Mechanical** June 1989
McGill University, Montreal, Canada
Aeronautical Option
David E. and Ronnie Schouela Prize (best Honours' thesis)
Ernest Brown Gold Medal for Highest Ability throughout the Undergraduate Course (Faculty of Engineering distinction)

WORK EXPERIENCE

- Full Professor**, Mechanical Eng Dept, Laval University since June 2004
- Research Associate**, Research center of CHU de Québec-Université Laval since March 2007
- Director** of B.Eng program in Mechanical Engineering, Laval University 2009-2011
- Director** of M.Sc program in Aerospace Engineering, Laval University 1998-2009
- Associate professor**, Mechanical Eng Dept, Laval University 2000-2004
- Assistant professor**, Mechanical Eng Dept, Laval University 1995-2000
- Postdoctoral fellow**, CFD Laboratory, Laval University Jan-July 1995

RESEARCH EXPERIENCE ABROAD

1 week at the 4th Madrid Turbulence Workshop, organised by the School of Aeronautics of Universidad Politecnica de Madrid, Madrid, Spain, July 2019. Stay supported by the COTURB project of the European Research Council (ERC).

5 weeks at the 2nd Madrid Turbulence Workshop, organised by the School of Aeronautics of Universidad Politecnica de Madrid, Madrid, Spain, May-June 2015. Stay supported by the COTURB project of the European Research Council (ERC).

Research year at the School of Aeronautics of Universidad Politecnica de Madrid, Madrid, Spain in 2014-15. Stay supported by the Multiflow program of European Research Council (ERC).

2 weeks in 2014 at Faculty of Aeronautics and Astronautics of Istanbul Technical University. Stay supported by the Scientific and Technological Research Council of Turkey (TÜBİTAK), 2221 Program.

5 weeks at the First Madrid Turbulence Workshop, organised by the School of Aeronautics of Universidad Politecnica de Madrid, Madrid, Spain in 2013. Stay supported by the Multiflow program of the European Research Council (ERC).

3 weeks at NORDITA/FLOW Programme on Turbulent Boundary Layers, sponsored jointly by Nordita and the Linné FLOW Centre, Stockholm, Sweden in 2010.

2 months at Royal Institute of Technology (KTH), Stockholm, Sweden in 2006. Stay supported by a Research fellowship of The Swedish Foundation for International Cooperation in Research and Higher Education (STINT).

TRAINING OF HIGHLY QUALIFIED PERSONNEL

Currently: 5 PhD, 2 MSc

Graduated: 2 postdoctoral fellows, 3 PhD, 11 MSc, 32 undergraduates

PROFESSIONAL AFFILIATIONS

American Institute of Aeronautics and Astronautics, Senior member

American Physical Society

American Society of Mechanical Engineers

Canadian Aeronautics and Space Institute (CASI)

Ordre des Ingénieurs du Québec

HONORS AND AWARDS

2001 National award for excellence in industry-education partnerships of the Conference board of Canada. Awarded for the Virtual environment option of the Master's program in aerospace engineering.

Most outstanding teacher in the Mechanical engineering dept., Distinction given 4 times by undergraduate students, Galas du Mérite étudiant 1997, 2002, 2003 and 2009 of l'Association des étudiant(e)s en sciences et génie de l'Université Laval, AESGUL.

All-Star Professor of the Faculty of Sciences and Engineering, Distinction given 18 times, 1999 to 2003, 2007 to 2022, Laval University.

7 times *Collective mentor of the graduating students at the Iron Ring Ceremony*, 2002-2005, 2012-2014.

20 times nominee in the category *Most outstanding teacher in the Mechanical engineering dept.*, Galas du Mérite étudiant 1997, 2001 to 2003, 2006 to 2013, 2017 to 2023 of l'Association des étudiant(e)s en sciences et génie de l'Université Laval, AESGUL.

HONORS AND AWARDS (continued)

Mention Très Honorable avec Félicitations for my doctoral thesis (highest distinction), École Nationale Supérieure de l'Aéronautique et de l'Espace (Sup'Aéro), Toulouse, France.

1967 Science and Engineering Scholarship of NSERC (1989). Prestigious postgraduate scholarship given to only 50 Canadian graduating students annually.

Donald Wills Douglas Prize Fellowship of California Institute of Technology (Graduate scholarship, 1989).

Prix d'excellence de l'Ordre des ingénieurs du Québec (1989).

McGill University: Ernest Brown Gold Medal for Highest Ability throughout the Undergraduate Course (1989). Faculty of Engineering. Great Distinction and University Scholar (1989). David E. and Ronnie Schouela Prize (best undergraduate thesis, Honours program, 1989). R.L. Weldon Scholarship (1988, 1987). J.W. McConnell Award (1987, 1986, 1985). Abe and Jennie Brock Award (1986).

PUBLICATIONS

Articles in refereed publications

T. R. Gungor, Y. Maciel, A. Gungor (2022). Energy transfer mechanisms in adverse pressure gradient turbulent boundary layers: production and inter-component redistribution. *Journal of Fluid Mechanics*, 948, A5 1-38.

Y. Rioux, J. Fradette, Y. Maciel, A. Bégin-Drolet, J. Ruel (2022). Biofabrication of Sodium Alginate Hydrogel Scaffolds for Heart Valve Tissue Engineering. *International Journal of Molecular Sciences* 23, 8567. Special Issue "Tissue Engineering and Cell Therapy".

J. Gosselin, A. Bégin-Drolet, Y. Maciel, J. Ruel (2020). A new approach based on a multiobjective evolutionary algorithm for accurate control of flow rate and blood pressure in cardiac bioreactors. *Cardiovascular Engineering and Technology* 11, 84-95.

Y. Maciel, T. Wei, A.G. Gungor, M. Simens (2018). Outer scales and parameters of adverse pressure gradient turbulent boundary layers. *Journal of Fluid Mechanics* 844, 5-35.

T. Wei, Y. Maciel (2018). Derivation of Zagarola-Smits scaling in zero-pressure-gradient turbulent boundary layers. *Physical Review Fluids* 3, 012601(R).

T. Wei, Y. Maciel, J. Klewicki (2017). Integral analysis of boundary layer flows with pressure gradient. *Physical Review Fluids* 2, 092601.

Y. Maciel, A.G. Gungor, M. Simens (2017). Structural differences between small and large momentum-defect turbulent boundary layers. *International Journal of Heat and Fluid Flow* 67, 95-110.

Y. Maciel, M.P. Simens, A.G. Gungor (2017). Coherent structures in a non-equilibrium large-velocity-defect turbulent boundary layer. Invited paper from the international symposium Turbulence and Shear Flow Phenomena TSFP9 2015. *Flow, Turbulence and Combustion* 98, 1-20.

A. Gungor, Y. Maciel, M. P. Simens, J. Soria (2016). Scaling and statistics of large-defect adverse pressure gradient turbulent boundary layers. *International Journal of Heat and Fluid Flow* 59, 109-124.

S. Rahgozar and Y. Maciel (2016). A visual assessment of hairpin packet structures in a DNS of a turbulent boundary layer. *European Journal of Mechanics / B Fluids* 56, 161-171.

P Duquesne, Y Maciel, C Deschênes (2016). Investigation of flow separation in a diffuser of a bulb turbine. *Journal of Fluids Engineering* 138(1).

P Duquesne, Y Maciel, C Deschênes (2015). Unsteady flow separation in a turbine diffuser. *Experiments in Fluids*, 56:156, 15 pages.

S. Rahgozar, Y. Maciel and P. Schlatter (2013) Spatial resolution analysis of planar PIV measurements to characterise vortices in turbulent flows, *Journal of Turbulence*, 14:10, 37-66.

Articles in refereed publications (continued)

- S. Rahgozar and Y. Maciel (2012). Statistical analysis of low- and high-speed large-scale structures in the outer region of an adverse pressure gradient turbulent boundary layer. *Journal of Turbulence* 13, N46, 1-24.
- Y. Maciel, M. Robitaille, S. Rahgozar (2012). A method for characterizing cross-sections of vortices in turbulent flows. *International Journal of Heat and Fluid Flow* 37, 177-188.
- S. Rahgozar and Y. Maciel (2011). Low- and high-speed structures in the outer region of an adverse-pressure-gradient turbulent boundary layer. *Experimental Thermal and Fluid Sciences* 35(8), 1575-1587.
- Y. Maciel, L. Facciolo, C. Duwig, L. Fuchs and P. H. Alfredsson (2008). Near-field dynamics of a turbulent round jet with moderate swirl. Invited paper for a special issue on the international symposium Turbulence and Shear Flow Phenomena TSFP5 2007. *International Journal of Heat and Fluid Flow* 29, 675-686.
- S. Julien, F. Torriano, G. Dumas, Y. Maciel (2008). Secondary Flow and Roll Cells Interaction in High-Aspect-Ratio Rotating Turbulent Duct Flows. Invited paper for a special issue on CFD 2006 of the CFD Society of Canada. *International Journal of Computational Fluid Dynamics* 22(1-2), 19-28.
- Y. Maciel, K.S. Rossignol, J. Lemay (2006). Self-Similarity in the Outer Region of Adverse-Pressure-Gradient Turbulent Boundary Layers. Invited paper for a special section on Turbulent Boundary Layers, *AIAA Journal* 44(11), 2450-2464.
- Y. Maciel, K.S. Rossignol, J. Lemay (2006). A Study of a Turbulent Boundary Layer in Stalled-Airfoil-Type Flow Conditions. *Experiments in Fluids* 41, 573-590.
- Y. Maciel and C. Gleyzes (2000). Survey of Multi-wire Probe Data Processing Techniques and Efficient Processing of Four-Wire Probe Velocity Measurements in Turbulent Flows. *Experiments in Fluids* 29, 66-78.
- S.J. Price and Y. Maciel (1990). Solution of the Nonlinear Equations for Wake-induced Flutter via the Krylov and Bogoliubov Method of Averaging, *Journal of Fluids and Structures* 4, 519-540.

Articles in refereed conference proceedings

- A. Gilis, M. Coulaud, A. Munoz, Y. Maciel, S. Houde (2022). Experimental study of the flow of the Tr-Francis turbine along the no-load curve. 31st IAHR Symposium on Hydraulic Machinery and Systems, Trondheim, Norway, 26 June to 1 July 2022. IOP Conf. Ser.: Earth Environ. Sci. 1079 012019.
- T. R. Gungor, A. Gungor, Y. Maciel (2021). Energy transfer in turbulent boundary layers with adverse pressure gradient. iTi Conference on Turbulence IX, held in Bertinoro, Italy, February 25-26, 2021, *Progress in Turbulence IX, Springer Proceedings in Physics* 267.
- T. R. Gungor, A. Gungor, Y. Maciel (2020). Reynolds shear-stress carrying structures in shear-dominated flows. 4th Madrid Turbulence Workshop, held in Madrid, Spain, June 10-July 12, 2019, *Journal of Physics: Conference Series* 1522 (2020) 012009.
- T. R. Gungor, A. Gungor, Y. Maciel, M. P. Simens (2019). Investigation of the energy carrying structures in adverse pressure gradient flows. 11th International Symposium on Turbulence and Shear Flow Phenomena (TSFP11), Southampton, UK, July 30 to August 2, 2019.
- T. R. Gungor, A. Gungor, Y. Maciel, M. P. Simens (2019). Spatio-temporal spectra of adverse pressure gradient turbulent boundary layers. ParCFD'2019, 31st International Conference on Parallel Computational Fluid Dynamics, Antalya, Turkey, May 14-17, 2019.
- S Houde, G Dumas, Y Maciel, C Deschênes (2019). Investigations of rotating stall inception in a propeller turbine runner operating in low-load conditions. 29th IAHR Symposium on Hydraulic Machinery and Systems, Kyoto, Japan, September 16-21, 2018. IOP Conf. Ser.: Earth Environ. Sci. 240 022021.

Articles in refereed conference proceedings (continued)

Y. Maciel, T. Wei, A.G. Gungor, M. Simens (2018). Governing parameters of adverse pressure gradient turbulent boundary layers. ASME FEDSM2018 – 5th Joint US-European Fluids Engineering Summer Conference, Montreal, Canada, July 15-19, 2018, paper FEDSM2018-83110.

Y. Maciel, A. Gungor, M. P. Simens (2016). Sweeps and ejections in ZPG and strong APG turbulent boundary layers. Proceedings of the 24th International Congress of Theoretical and Applied Mechanics ICTAM 2016, Montreal, Canada, August 21-26, 2016.

Y. Maciel, M. P. Simens, A. Gungor (2016). Coherent structures in a ZPG TBL and a strongly decelerated TBL. Proceedings of the 2nd Multiflow Summer Workshop held in Madrid, Spain, May 25-June 26, 2015, Institute of Physics: Conference Series 708 (2016) 012013.

A. Gungor, Y. Maciel, M. P. Simens (2016). The structure of APG turbulent boundary layers. Progress in Wall Turbulence 2: Understanding and Modelling. Proceedings of the WALLTURB International Workshop held in Lille, France, June 18-20, 2014. Springer, ERCOFTAC Series, Vol. 23, 283-293.

S. Rahgozar and Y. Maciel (2016). Three dimensional nature of 2D hairpin packet signatures in a DNS of a turbulent boundary layer. Progress in Wall Turbulence 2: Understanding and Modelling. Proceedings of the WALLTURB International Workshop held in Lille, France, June 18-20, 2014. Springer, ERCOFTAC Series, Vol. 23, 83-92.

Y. Maciel, M. P. Simens, A. Gungor (2015). Turbulent structures in a non-equilibrium large-velocity-defect turbulent boundary layer. Ninth Symposium on Turbulence and Shear Flow Phenomena (TSFP-9), Melbourne, Australia, June 30 to July 3, 2015

P Duquesne, Y Maciel, G D Ciocan, C Deschênes (2014). Flow separation in a straight draft tube, particle image velocimetry. 27th IAHR Symposium on Hydraulic Machinery and Systems, Montreal, Canada, September 22-26, 2014.

P Duquesne, Y Maciel, V Aeschlimann, G D Ciocan, C Deschênes (2014). Power break off in a bulb turbine: wall pressure sensor investigation. 27th IAHR Symposium on Hydraulic Machinery and Systems, Montreal, Canada, September 22-26, 2014.

P Duquesne, R Fraser, Y Maciel, V Aeschlimann, C Deschênes (2014). Draft tube flow phenomena across the bulb turbine hill chart. 27th IAHR Symposium on Hydraulic Machinery and Systems, Montreal, Canada, September 22-26, 2014. IOP Conference Series: Earth and Environmental Science 22 (3), 032003

A. Gungor, Y. Maciel, M. P. Simens, J. Soria (2014). Analysis of a Turbulent Boundary Layer Subjected to a Strong Adverse Pressure Gradient. Proceedings of the First Multiflow Summer Workshop held in Madrid, Spain, June 10-July 12, 2013, Institute of Physics: Conference Series 506 (2014) 012007.

S. Rahgozar and Y. Maciel (2011). Large and very large scale structures in the outer region of an adverse-pressure-gradient turbulent boundary layer. Seventh International Symposium on Turbulence and Shear Flow Phenomena TSFP-7, Ottawa, Canada, 28-31 July 2011. Paper 6A2P.

S. Rahgozar and Y. Maciel (2011). Spanwise characteristics of hairpin packets in a turbulent boundary layer under a strong adverse pressure gradient. Progress in Wall Turbulence: Understanding and modelling. Proceedings of the WALLTURB International Workshop held in Lille, France, April 21-23, 2009 ERCOFTAC Series, Vol. 14, Springer, 454 p., Hardcover, ISBN: 978-90-481-9602-9.

Y. Maciel and M.H. Shafiei Mayam (2010). Hairpin structures in a turbulent boundary layer under stalled-airfoil-type flow conditions. Progress in Turbulence III, Proceedings of the iTi Conference in Turbulence 2008, Series: Springer Proceedings in Physics , Vol. 131, Peinke, Joachim; Oberlack, Martin; Talamelli, Alessandro (Eds.) , 2010, Approx. 350 p., Hardcover, ISBN: 978-3-642-02224-1, 199-202. Conference held on October 12-15, 2008 in Bertinoro, Italy.

L. Facciolo, P. H. Alfredsson and Y. Maciel (2007). Near-field dynamics of a turbulent round jet with moderate swirl. Turbulence and Shear Flow Phenomena TSFP-5 2007, Munich, 27-29 August 2007.

Articles in refereed conference proceedings (continued)

M.H. Shafiei Mayam and Y. Maciel (2007). Hairpin structures in a turbulent boundary layer with strong adverse pressure gradient. Turbulence and Shear Flow Phenomena TSFP-5 2007, Munich, 27-29 August 2007.

Y. Maciel (2007). Scaling of the turbulent boundary layer in arbitrary pressure gradients. 12th Aerodynamics Symposium, CASI Aero 2007, Toronto, 24-26 April 2007.

M.H. Shafiei Mayam and Y. Maciel (2007). Coherent structures in a turbulent boundary layer in stalled-airfoil-type flow conditions. 12th Aerodynamics Symposium, CASI Aero 2007, Toronto, 24-26 April 2007.

Y. Maciel (2006). Equilibrium boundary layers revisited. Euromech Fluid Mechanics Conference, EFMC-6. KTH, Stockholm, Sweden, 26-30 June, 2006.

R. Qian, C. Deschênes, R. Fraser, Y. Maciel (2006). Flow Field Measurement around a Guide Vane with Particle Image Velocimetry. HydroVision 2006, Portland, Oregon, July 31 to Aug. 4, 2006.

Y. Maciel, K.S. Rossignol, J. Lemay (2005). Experimental study of an airfoil-type separated turbulent boundary layer. 35th AIAA Fluid Dynamics Conference. Paper AIAA-2005-5291, Toronto, 6-9 June 2005.

Y. Maciel, G. Yan, G. Dumas (2005). Experiments on Turbulent Channel Flow Subject to System Rotation, Proceedings of 20th Canadian Congress of Applied Mechanics CANCAM 2005, Montreal, Canada, 30 May-2 June 2005.

S. Julien, F. Torriano, G. Dumas, Y. Maciel (2005). Investigation of the 3D inlet flow characteristics in a rotating channel setup, Proceedings of 20th Canadian Congress of Applied Mechanics CANCAM 2005, Montreal, Canada, 30 May-2 June 2005.

Y. Maciel, K.S. Rossignol, J. Lemay (2005). PIV study of a stalled-airfoil-type flow. 11th Aerodynamics Symposium of the 52nd AGM & Conference, Toronto, 26-27 April 2005.

Y. Maciel, D. Picard, G. Yan, C. Gleyzes, G. Dumas (2003). Fully developed turbulent channel flow subject to system rotation. 33th AIAA Fluid Dynamics Conference. Paper AIAA-2003-4153, Orlando, Florida, 23-26 June 2003.

Y. Maciel, A. Vénisse, S. Julien, J. Lemay (2003). Airfoil-Type Separated Boundary Layer Generated on a Wind-Tunnel Floor. 33th AIAA Fluid Dynamics Conference. Paper AIAA-2003-4244, Orlando, Florida, 23-26 June 2003.

Y. Maciel, D. Picard, G. Yan, C. Gleyzes, G. Dumas (2003). Flow validation of a setup designed for experiments on rotating turbulent channel flows. Proc. 50th CASI Annual General Meeting. Montreal, Canada, 28-30 April 2003.

Y. Maciel, A. Vénisse, S. Julien, J. Lemay (2003). An experimental set-up for the study of separated turbulent boundary layers. Proc. 50th CASI Annual General Meeting. Montreal, Canada, 28-30 April 2003.

M. Deslauriers, L. Lamontagne, J. Lemay, Y. Maciel, G. Dumas (1999). Airfoil Testing in Wind Tunnels: Velocity Control and Measurement in Presence of End-Plates. Proc. 46th CASI Annual Conference. Montreal, Canada, 3-5 mai 1999. pp. 37-46.

L. Lamontagne, M. Deslauriers, G. Dumas, Y. Maciel, J. Lemay (1999). Section Lift and Drag Measurements on Wings at Low Reynolds Number. Proc. 46th CASI Annual Conference. Montreal, Canada, 3-5 mai 1999. pp. 435-436.

Y. Maciel et C. Gleyzes (1997). Efficient Data Processing Method for Four-Wire Probe Measurements in Highly Turbulent Shear Flows, Proc. ASME Fluids Engineering Conference, Vancouver, 22-26 June 1997.

J.M.H. Gooden, C. Gleyzes, Y. Maciel (1997). Experimental Study of the Flow around Two Scaled 3D Swept Wing, Proc. 28th AIAA Fluid Dynamics Conference, Snowmass, Colorado, 29 June-2 July 1997.

Articles in refereed conference proceedings (continued)

C. Gleyzes, Y. Maciel., J.M.H. Gooden (1997). Experimental Study of the Flow around a 3D Swept Wing, Compte-rendus du 16e Congrès Canadien de Mécanique Appliquée CANCAM 97, Quebec City, Canada, 1-6 June 1997

C. Gleyzes, Y. Maciel (1995). Étude de l'écoulement autour de l'aile Garteur AD (AG07), Compte-rendus du Colloque de Mécanique des Fluides Expérimentale de Toulouse, Toulouse, France, 11-12 May 1995, P13-1 to 4.

C. Gleyzes, Y. Maciel, J. Cousteix, J.H.M. Gooden, W. Reinders, et B. Van Den Berg (1993). Three-dimensional Turbulent Flow around the Garteur Swept Wing. Selected Features. Proceedings of the Ninth Symposium on "Turbulent Shear Flows", Kyoto, Japan 1993, paper 4-4.

Invited lectures

Effects of adverse pressure gradient on the structure of turbulent boundary layers, A. Gungor, Y. Maciel, M. P. Simens, T. R. Gungor. Presented by A. Gungor. Fluid Mechanics seminars, University of Cambridge, 12 October 2018, Cambridge, UK.

Direct numerical simulations of adverse pressure gradient turbulent boundary layers, A. Gungor, Y. Maciel, M. P. Simens, T. R. Gungor. Presented by A. Gungor. École Centrale de Lille, 19 July 2018, Lille, France.

Scaling of adverse pressure gradient turbulent boundary layers, Workshop New Challenges in Wall Turbulence, 14-16 June 2017, Lille, France.

An overview of adverse pressure gradient turbulent boundary layers. Istanbul Technical University, Istanbul, 4 November 2014.

Structure of mean flow and turbulence in adverse pressure gradient turbulent boundary layers. School of Aeronautics of Universidad Politecnica de Madrid, Madrid, Spain, 22 October 2014.

Structure of mean flow and turbulence in adverse pressure gradient turbulent boundary layers. Universität der Bundeswehr, Munich, 15 October 2014.

An overview of adverse pressure gradient turbulent boundary layers. First Multiflow Summer Workshop, organised by the School of Aeronautics of Universidad Politecnica de Madrid, Madrid, Spain, 4 July 2013.

Outer region structures in a turbulent boundary layer under a strong adverse pressure gradient. NORDITA/FLOW Programme on Turbulent Boundary Layers, sponsored jointly by Nordita and Linné FLOW Centre, Stockholm, Sweden, 21 April 2010.

Research on turbulent flows at Laval University. Concordia University Multiphysics Workshop, Concordia University, Montreal, Canada, 2-3 March 2009.

Faisabilité d'une maîtrise interuniversitaire en biomatériaux au Québec. Colloque Biomatériaux pour le diagnostic et le traitement des maladies cardiovasculaires, Congrès de l'ACFAS 2008, Centre de Congrès de Québec, Quebec City, 5 May 2008.

Near-field dynamics of a turbulent round jet with moderate swirl. Department of Mechanics, KTH, Stockholm, Sweden, 23 August 2007.

Structures cohérentes dans une couche limite turbulente en fort gradient de pression adverse. Institut de Mécanique des Fluides de Toulouse, Toulouse, France, 21 June 2007.

Scaling and self-similarity in the outer region of turbulent boundary layers. Fourth International Workshop on Wall-Bounded Turbulent Flows, Erice, Italy, 30 Sept.-3 Oct. 2006.

Research on turbulent flows at Laval University. Department of Mechanics, KTH, Stockholm, Sweden, 25 July 2006.

Auto-similitude et échelles de la région externe de la couche limite turbulente. ONERA/CERT, Toulouse, France, 13 July 2006.

Invited lectures (continued)

Equilibrium and Self-Similarity of Turbulent Boundary Layers. 17th Canadian Symposium on Fluid Dynamics, York University in Toronto, June 17-19, 2006.

Presentations and other contributions

A. Rezavand Hesari, A. Munoz, M. Coulaud, Y. Maciel, S. Houde (2023). Flow measurements at the entrance of the Tr-Francis turbine runner in no-load operating conditions. Hydro Turbine Symposium - Canadian Society for Mechanical Engineering International Congress 2023. May 28-31, 2023, Sherbrooke, Canada

Y. Rioux, A. Bégin-Drolet, C.J. Hayward, Y. Maciel, J. Fradette, J. Ruel (2023). An Innovative Culturing Method of an Alginate-Based Hydrogel Aortic Valve Substitute with Native-Like Geometry. Termis Americas 2023 Annual Conference. April 11-14, 2023, Boston, USA

Y. Rioux, A. Bégin-Drolet, C.J. Hayward, Y. Maciel, J. Fradette, J. Ruel (2023). "Young Investigator best poster award". An Innovative Culturing Method of an Alginate-Based Hydrogel Aortic Valve Substitute with Native-Like Geometry. Heart Valve Society 2023 Annual Conference. March 29-April 1, 2023, Malaga, Spain

Y. Rioux, A. Bégin-Drolet, C.J. Hayward, Y. Maciel, J. Fradette, J. Ruel (2022). Ensemencement rapide et culture dynamique d'un échafaudage d'hydrogel cellularisé de valves aortiques. 14^e Journée annuelle du réseau ThéCell : Réseau de thérapie cellulaire, tissulaire et génique du Québec. November 14, 2022, Montreal, Canada

Y. Rioux, A. Bégin-Drolet, C.J. Hayward, Y. Maciel, J. Fradette, J. Ruel (2022). Développement d'un nouveau procédé de mise en culture rapide d'un substitut de valve aortique. 63^e réunion annuelle du Club de Recherches Cliniques du Québec, Sept 29-Oct 1.

T. R. Gungor, Y. Maciel, A. Gungor (2021). Energy Transfer in the Inner and Outer Layers of Adverse Pressure Gradient Turbulent Boundary Layers. 74th Annual Meeting of the APS Division of Fluid Dynamics, November 21-23, 2021, Phoenix, Arizona.

Y. Rioux, A. Bégin-Drolet, M. Jaguenaud, A. Brodeur, C.J. Hayward, Y. Maciel, J. Fradette, J. Ruel (2021). Développement d'un nouveau procédé de biofabrication de substituts de valves aortiques. 13^e Journée annuelle du réseau ThéCell : Réseau de thérapie cellulaire, tissulaire et génique du Québec, November 30, 2021, Quebec City, Quebec.

T. R. Gungor, Y. Maciel, A. Gungor (2020). Energy Transfer Mechanisms in Adverse Pressure Gradient Turbulent Boundary Layers. 73rd Annual Meeting of the APS Division of Fluid Dynamics, November 22-24, 2020, Chicago, Illinois.

C. Metin, T. R. Gungor, M. P. Simens, Y. Maciel, A. Gungor (2020). How history effects influence favourable pressure gradient turbulent boundary layers. 73rd Annual Meeting of the APS Division of Fluid Dynamics, November 22-24, 2020, Chicago, Illinois.

J. Ruel, A. Bégin-Drolet, F.A. Auger, L. Germain, J. Fradette, Y. Maciel, C. Hoesli, R. Leask (2019). Recherche en impression 3D médicale, deux exemples concrets d'application : les maladies cardiovasculaires et le diabète. 13^e Forum de l'industrie de la santé de Québec, Quebec City, 3 Decembre 2019.

T. R. Gungor, A. Gungor, Y. Maciel, M. P. Simens (2019). Spatio-temporal characteristics of coherent structures in shear-dominated flows. 72th Annual Meeting of the APS Division of Fluid Dynamics, November 23-26, 2019, Seattle, Washington.

T. R. Gungor, A. Gungor, Y. Maciel, M. P. Simens (2018). Spatio-temporal spectra in a strongly decelerated turbulent boundary layer. 71th Annual Meeting of the APS Division of Fluid Dynamics, November 18-20, 2018, Atlanta, Georgia.

Presentations and other contributions (continued)

T. R. Gungor, A. Gungor, Y. Maciel, M. P. Simens (2017). DNS of a non-equilibrium adverse pressure gradient turbulent boundary layer. 70th Annual Meeting of the APS Division of Fluid Dynamics, November 19-21, 2017, Denver, Colorado.

T. Wei, Y. Maciel, J. Klewicki (2017). Integral analysis of boundary layer flows with pressure gradient. 70th Annual Meeting of the APS Division of Fluid Dynamics, November 19-21, 2017, Denver, Colorado.

A. Gungor, Y. Maciel, M. P. Simens (2017). Direct Numerical Simulation of a Non-Equilibrium Adverse Pressure Gradient Boundary Layer up to $Re_\theta=8000$. 16th European Turbulence Conference, 21-24 August 2017, Stockholm, Sweden.

J. Gosselin, J. Ruel, A. Bégin-Drolet, Y. Maciel, L. Germain, F. A. Auger. (2016). Amélioration de la reproduction in vitro du débit aortique dans un bioréacteur cardiaque. 16e Journée annuelle de la recherche en santé, 25-26 mai 2016, Université Laval, Canada. (Poster)

A. Bobke, Y. Maciel, R. Vinuesa, R. Örlü, P. Schlatter (2015). Pressure gradient effects on the structure of turbulent boundary layers. 15th European Turbulence Conference, 25-28 August 2015, Delft, The Netherlands.

A. Gungor, Y. Maciel, M. P. Simens (2014). Turbulence structures in a non-equilibrium large-velocity-defect turbulent boundary layer. 67th Annual Meeting of the APS Division of Fluid Dynamics. San Francisco, CA, USA, 23-25 nov. 2014.

Y. Maciel, A. Gungor, M. P. Simens, J. Soria (2013). The high-order statistics of APG turbulent boundary layers. 66th Annual Meeting of the APS Division of Fluid Dynamics. Pittsburgh, USA, 24-26 nov. 2013.

A. Gungor, Y. Maciel, M. P. Simens, J. Soria (2013). The structure of Adverse Pressure Gradient Turbulent Boundary Layers. 66th Annual Meeting of the APS Division of Fluid Dynamics. Pittsburgh, USA, 24-26 nov. 2013.

Y. Maciel (2007). *Modification d'un déflecteur d'air*. Contract report for Xeos Imagerie Inc.

Y. Maciel (1997). *Étude de la prise au vent de deux modèles de bac de recyclage*. Contract report for Sani-Gestion Inc.

Y. Maciel (1997). *Effects of spanwise system rotation on the structure of fully developed turbulent channel flow*, 1000 Islands Fluids Meeting, Gananoque, Ontario, 11-13 avril 1997 (communication).

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Contributions to the profession and to collectivity

Co-chair of the Symposium on hydraulic turbines, International congress CSME 2023 of the Canadian Society of Mechanical Engineering, 28-31 May 2023, Sherbrooke, Canada.

Member of the organizing committee of the 13th International Symposium on Turbulence and Shear Flow Phenomena (TSFP13), 25-28 June 2024, Montreal, Canada.

Member of the advisory committee of the Symposiums on Turbulence and Shear Flow Phenomena (TSFP) since 2016.

Scientific committee of the International Conference on Jets, Wakes and Separated Flows (ICJWSF2015), June 16-18, 2015, Stockholm, Sweden.

Co-manager of the reform of the Bachelor of Mechanical Engineering program, Univ. Laval, 2010-2014.

Member of the program committee of the Bachelor of Mechanical Engineering program, Univ. Laval, since 1995.

Member of the program committee of the Bachelor of Physics Engineering program, Univ. Laval, since 1998.

Examiner of the Bachelor of Mechanical Engineering program of École Polytechnique de Montréal, for the Canadian Engineering Accreditation Board, 2011-2012.

Associate editor of the Transactions of the Canadian Society for Mechanical Engineering, 2003-2006.

Advisor, Programme science et technologie du secondaire, Ministère de l'Éducation du Québec, 2004.

Membre of a project for pedagogical applications of information technology: Outil pédagogique (didacticiel) pour l'apprentissage des mathématiques (OPEA-MAT), 1996-1999.

Activities to promote science and engineering among youth and general (Super Expo-Sciences Bell, National Space day, discovery projects for high schools and colleges, Doors Open events, local radio programs).

Regular participation in review processes:

- Evaluation committees and referee for research grant applications (NSERC, FQRNT, Ministry of Defense of Canada, MITACS, Israel Science Foundation);

Contributions to the profession and to collectivity (continued)

- Master's and PhD thesis around the world.
- Journal papers (Journal of Fluid Mechanics, Physical Review Fluids, Physics of Fluids, Experiments in Fluids, International Journal of Heat and Fluid Flow, Flow Turbulence and Combustion, Journal of Turbulence, Journal of Fluids Engineering, AIAA Journal, Trans. CSME)
- Professor promotion applications (Royal Institute of Technology KTH, Stockholm, Sweden; Royal Military College of Canada)