Curriculum Vitae

Omar Darío López Mejía

Address

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Nationality: Colombia

Education

01/87–12/92	Ciudad Escolar Comfenalco, Cartagena, Colombia. Secondary Education.
01/93–03/2000	Universidad Industrial de Santander, Colombia. B.Sc in Mechanical Engineering. Senior design project: *Design and construction of a hydraulic drawing press to manufacture cans used in the Spin-on oil filters industry.* Brief Description: This project consisted in the design and construction of a hydraulic drawing press for the production of cans used in the manufacture of oil filters for internal combustion engines. This project was sponsored by INDUSTRIAS PARTMO S.A, an oil filter manufacturing company located in Bucaramanga, Colombia. The main objectives achieved in this project were: the reduction of time and resources employed in the manufacturing process of cans and the developed of a new type of two-stage dye never used before in this kind of industry in Colombia.
01/2001–09/2002	Universidad de los Andes, Colombia M.Sc in Mechanical Engineering Research Area: Theoretical and Computational Mechanics. Thesis: *Computational simulation of the Karman vortex street using vortex dynamics.*; Supervisor: Dr J. Toro. Brief Description: This project consisted in the implementation of a vortex method in order to simulate and characterize the Karman vortex street developed by a fluid flow around a cylinder. The results obtained in this project helped to

understand the application of vortex methods in fluid mechanics and the Karman vortex phenomenon at moderate Reynolds numbers.

08/2004–05/2009 University of Texas at Austin, USA
Ph.D. in Mechanical Engineering.
Research Area: Thermal Fluid Systems.

Dissertation: *Computational study of a NACA4415 airfoil using synthetic jet control*; Supervisor: Dr. R. Moser
Brief Description: In this research project, a Computational Fluid Dynamics (CFD) simulation of a modified NACA4415 airfoil with tangential synthetic jet actuators close to the trailing edge was implemented and performed. A hybrid RANS/LES turbulence model called DDES was used to simulate the turbulent flow around the airfoil. Two different approaches were used to model the action of tangential-blowing synthetic jet actuators at different angles of attack: a detailed model and a Reynolds stress synthetic jet (RSSJ) model. The detailed model resolves the synthetic jet dynamics in time while the RSSJ model tries to capture the major effects that the synthetic jet induces in the flow by modeling the changes in the Reynolds stress induced by the actuator. Both models along with the CFD computations in which they are embedded were validated against wind tunnel data acquired at Georgia Tech.

Honors/Awards

03/2001 Honorific distinction: CUM LAUDE, Universidad Industrial de Santander.

08/2002 Honorific distinction: Honours degree, Universidad de los Andes.

08/2004–08/2007 Fulbright-LASPAU scholarship. Fulbright Colombia.

08/2004–04/2005 David Bruton, Jr. Fellowship. College of engineering, University of Texas at Austin.

12/2005 Research Day 2005 winner, Drexel University

08/2006–12/2006 George J. Heuer, Jr. Ph.D. Endowed Graduate Fellowship Fund, University of Texas at Austin.

08/2012 Premio Corona Pro habitat. Engineering category. Bogotá, Colombia

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Professional Experience

06/1998–12/1998 Occidental petroleum corporation. Caño Limon, Colombia. Practicum student

01/1999–07/1999	Ecopetrol. Barrancabermeja, Colombia. Practicum student
01/2000–12/2000	Industrias PARTMO S.A. Bucaramanga, Colombia. Project engineer and manager

Educational Experience

03/2001–06/2001	Universidad de los Andes. Bogota, Colombia. Mechanical engineering department graduate assistant.
01/2002–06/2002	Universidad de los Andes. Bogota, Colombia. Mechanical engineering department teaching assistant.
08/2002–03/2004	Universidad de los Andes. Bogota, Colombia. Mechanical engineering department teacher and lab coordinator.
08/2005–05/2006	University of Texas at Austin. USA College of engineering fluid Mechanics, calculus and thermodynamics tutor
08/2009–01/2016	Universidad de los Andes. Bogota, Colombia. Mechanical engineering department assistant professor.
01/2016–Now	Universidad de los Andes. Bogota, Colombia. Mechanical engineering department associate professor.

Courses Taught

Undergradute:
IMEC2210 Fluid Mechanics.
IMEC2210L Fluid Mechanics laboratory.
IMEC1001 Introduction to engineering experimentation.
IMEC1001L Introduction to engineering experimentation laboratory.
IMEC1330 Thermodynamics.
IMEC1330L Thermodynamics laboratory.
IMEC3120 Computational Aerodynamics.

Graduate:
IMEC 4210 Introduction to computational fluid dynamics.
IMEC 1800 Computational Mechanics Seminar.
IMEC 4003 Numerical solution of PDEs.
IMEC 4607 Continumm mechanics.

M.S. Supervisions completed

12/2010	Rodrigo Jimenez.

06/2011	Luis F. Ramirez.
12/2011	Hugo Coronado.
12/2011	Carlos Murillo.
06/2012	Jonathan Camargo.
06/2012	Natalia Castro.
12/2012	Carolina Parra.
12/2012	Andres Perez.
12/2012	Sergio Pedraza.
12/2012	Nicolas Ibagon.
06/2013	Juan C. Mahecha.
12/2013	Juan D. Colmenares.
12/2013	Carlos M. Osorio.
06/2014	Diana Meneses.
06/2014	Adriana Moreno.
06/2014	Javier I. Guevara.
12/2014	Juan S. Velandia.
06/2015	Andrea Matiz.
12/2015	Sergio Ardila.
06/2016	Ramiro Medina.
06/2016	Pablo Cortes.
12/2016	John Quiñonez.
12/2016	Diego Ferreira.

M.S. IN PROGRESS

David Blanco.

David Velasco

Camilo Sedano.

Nicolas Vargas.

PHD. IN PROGRESS

Andrés Pérez.

Undergradute Senior Project Supervisions Completed

12/2009	David Duran.
06/2010	Diego A. Puerto.
12/2010	Daniel Arbelaez.
12/2010	Luis Avila.
12/2010	Luis Longas.
12/2010	Andres Diaz.
06/2011	Juan C. Mahecha.
06/2011	Carlos Coy.
12/2011	Abel Rojas.
12/2011	Daniel Jaramillo.
12/2011	Alejandro Osorio.
12/2011	Juan Vargas.
06/2012	Diana Meneses.
06/2012	Sebastian Leguizamon.
06/2012	Santiago Arango.
12/2012	Andres Ordoñez.
12/2012	Julio Pinzon.
12/2012	Carlos Sanchez.
12/2012	Andrea Perdomo.
06/2013	Francisco Diaz.
06/2013	Juan S. Velandia.
06/2013	Salvattore Oñate.
06/2013	Diego Rojas.
06/2013	Giovanny Piñeros.
06/2013	Christian Meneses.
12/2013	Oscar Berrio.
06/2014	Carlos Lara.
06/2014	Hugo Pineda.

06/2014	Nicolas Vargas.
06/2014	Jose Urbano.
12/2014	Jorge Leon.
12/2014	Pablo Cortes.
12/2014	Ramiro Medina.
12/2014	David Blanco.

Research Experience

07/2001–12/2001	Destruction of ozone depleting substances by incineration. Sponsoring Institution: Universidad de los Andes. Mechanical engineering department. Position: Graduate research assistant. Supervisor: Dr J. Huertas. Research area: Energy Conversion.
06/2001–07/2002	Computational simulation of the Karman vortex street using vortex dynamics. Sponsoring Institution: Universidad de los Andes. Mechanical engineering department. Position: Graduate research assistant. Supervisor: Dr. J. Toro. Research area: Theoretical and Computational mechanics.
06/2004–12/2004	Computational simulation of a 2D oscillating plate in a supersonic flow using FLUENT. Sponsoring Institution: University of Texas at Austin. Department of Aerospace engineering. Position: Graduate research assistant. Supervisor: Dr R. Bhaskaran. Research area: Computational Fluid Dynamics.
08/2006–06/2009	Adaptive VOrticity Control Enabled flighT (AVOCET). Sponsoring Institution: Air Force Office of Scientific Research (AFOSR) and Multidisciplinary University Research Initiative (MURI). Position: Graduate research assistant. Supervisor: Dr. R. Moser. Research area: Computational Fluid Dynamics.
02/2010–12/2012	Development of aerial ammunitions and smart systems. Sponsoring Institution: Industria Militar de Colombia (INDUMIL) and Fuerza Aerea Colombiana (FAC). Position: Researcher. Supervisor: Dr. C. Rodriguez. Research area: Computational Fluid Dynamics.

02/2010–12/2012	Development of a ground military vehicle for reconnaissance. Sponsoring Institution: Industria Militar de Colombia (INDUMIL). Position: Researcher. Supervisor: Dr. L. Muñoz. Research area: Computational Fluid Dynamics.
12/2009–Now	Standardization of the production of seats used in massive transportation systems. Sponsoring Institution: Departamento administrativo de ciencia, tecnología e innovación (COLCIENCIAS) and BIOPLAST. Position: Researcher. Supervisor: Dr. J. Medina. Research area: Polymer processing simulation.
06/2013–Now	Computational analysis of the fluid-structure interaction of a Darrieus turbine. Sponsoring Institution: Departamento administrativo de ciencia, tecnología e innovación (COLCIENCIAS). Position: Principal Investigator. Research area: Computational Fluid Dynamics, Energy Conversion.
01/2012–12/2012	Computational Study of the flow in a toilet . Sponsoring Institution: Corona S.A. Position: Principal Investigator. Research area: Computational Fluid Dynamics.
01/2012–06/2013	Computational Study of a Radiator Refrigeration System used in Power Transformers . Sponsoring Institution: SIEMENS. Position: Principal Investigator. Research area: Computational Fluid Dynamics.
08/2013–01/2014	Computational Study of the Air Flow in an Induced Draft Cooling Tower. Sponsoring Institution: EDOSPINA S.A. Position: Principal Investigator. Research area: Computational Fluid Dynamics.
12/2013–06/2014	Computational Study of the Flow Inside a Shock Absorber. Sponsoring Institution: GABRIEL de Colombia S.A. Position: Principal Investigator. Research area: Computational Fluid Dynamics.
1/2014–Now	Analysis of the turbulent flow dynamics around a station wagon. Sponsoring Institution: Vicerrectoria de investigaciones - Universidad de los Andes. Position: Principal Investigator. Research area: Computational Fluid Dynamics.
11/2015–Now	Simulation of turbulent reacting flow with open-source codes. Sponsoring Institution: Universidad de los Andes and Universidad del Valle.

Position: Principal Investigator.
Research area: Computational Fluid Dynamics.

Refereed Archival Journal Publications

Effects of Trailing Edge Synthetic Jet Actuation on an Airfoil.
Authors: O. Lopez, D. Brzozowski, A. Glezer and R. Moser.
AIAA Journal. Volume 49, Number 8. pp 1763-1777. 2011.

Simulation of Rapidly Maneuvering Airfoils with Synthetic Jet Actuators.
Authors: S. Jee, O. Lopez, R. Moser, J. Muse, A. Kutay and A. Calise.
AIAA Journal. Volume 51, Number 8, pp. 1883-1897. 2013.

Dust explosions: CFD modeling as a tool to characterize the relevant parameters of the dust dispersion.
Authors: C. Murillo; N. Bardin-Monnier, O Lopez, F. Munoz and L. Perrin.
Chemical Engineering Science. Volume 104, pp 103-106. 2013.

Detached-Eddy Simulation of a Widebody Commercial Aircraft in High Lift Configuration.
Authors:J. Escobar, O. Lopez, C. Suarez, C. Silva, J. Velandia and C. Lara.
Journal of Aircraft, Vol. 52, No. 4, pp. 1112-1121. DOI 10.2514/1.C033164, 2015.

Computational Study of a Transverse Rotor Aircraft in Hover Using the Unsteady Vortex Lattice Method.
Authors: J. Colmenares, O. Lopez and S. Preidikman.
Mathematical problems in engineering, Vol. 2015, Article ID 478457, 9 pages, 2015; doi:10.1155/2015/478457.

Computational study of transient flow around Darrieus type Cross Flow Water Turbines.
Authors: O. Lopez, D. Meneses, B. Quintero and S. Lain.
Journal of Renewable and Sustainable Energy, Vol. 8, Issue 1, 2016; doi: 10.1063/1.4940023

Computational Study of the Air Flow Dynamics in an Induced Draft Cooling Tower
Authors: J. Velandia, M. Chery and O. Lopez
Journal of the Brazilian Society of Mechanical Sciences and Engineering, Vol. 38, Issue 8, pp. 2393-2401. DOI 10.1007/s40430-015-0348-y, 2016.

Analysis of the Vorticity in the Near Wake of a Station Wagon.

Authors: O. Lopez, S. Ardila, D. Blanco and L. Muñoz.
Journal of Fluids Engineering - ASME, Vol. 139, Issue 2, 8 pages, 2017 doi:10.1115/1.4034523

Numerical Simulations of Active Flow Control with Synthetic Jets in a Darrieus Turbine.
Authors: D. Velasco, O. Lopez and S. Lain.
Under review Renewable Energy, 2016.

A Review on Computational Fluid Dynamics Modelling and Simulation of Horizontal Axis Hydrokinetic Turbines.
Authors: L. Contreras, O. Lopez and S. Lain.
Under review Renewable and Sustainable Energy Reviews, 2016.

Prediction of a small pool-fire with FireFOAM.
Authors: C. Sedano, O. Lopez, A. Ladino and F. Munoz.
In Press International Journal of Chemical Engineering, 2017.

Numerical study of the effect of winglets on performance of a straight blade Darrieus water turbine.
Authors: M. Taborda, S. Lain and O. Lopez.
Under review Renewable Energy, 2017.

Conference Proceedings

08/2002 Modelamiento Computacional de la Calle de Vortices de Karman por Dinámica de Vorticidad (in Spanish).
Authors: O. Lopez and J. Toro.
In Proceedings of the first South American congress in computational mechanics. Mecánica Computacional Vol XXI pp.274-292, Argentina.

12/2003 Karman vortex street modeling and comparison with vortex dynamics methods.
Authors: F. Sanchez, O. Lopez and J. Toro.
In Proceedings of the first South American meeting of CFX users, Brazil.

12/2006 A Conservative high-order finite difference scheme for the numerical solution of the low mach-number equations.
Authors: O. Lopez, R. Moser and O. Ezekoye.
In Proceedings of ENIEF 2006: XV Congreso sobre Metodos Numericos y sus Aplicaciones. Mecánica Computacional Vol XXV, pp.1127-1137, Argentina.

11/2007 Delayed Detached Eddy Simulation of Flow Over an Airfoil with Synthetic Jet Control.
Authors: O. Lopez, U. Godse and R. Moser.
In proceedings of 60th Annual Meeting of the Division of Fluid Dynamics (American Physical Society), Salt Lake City, UT USA.

11/2008 Delayed Detached Eddy Simulation of Flow Over an Airfoil with Synthetic Jet Control.
Authors: O. Lopez and R. Moser.
In proceedings of ENIEF 2008: XVII Congreso sobre Metodos Numericos y sus Aplicaciones. Mecánica Computacional Vol XXVII, pp. 3225-3245, Argentina.

11/2008 Modeling of tangential synthetic jet actuators used for pitching control on an airfoil.
Authors: O. Lopez and R. Moser.
In proceedings of 61th Annual Meeting of the Division of Fluid Dynamics (American Physical Society), San Antonio, TX USA.

11/2008 Unsteady Flow Simulation of a Controlled Airfoil.
Authors: S. Jee, O. Lopez, J. Muse, A. Calise and R. Moser.
In proceedings of 61th Annual Meeting of the Division of Fluid Dynamics (American Physical Society), San Antonio, TX USA.

06/2009 Flow Simulation of a Controlled Airfoil with Synthetic Jet Actuators.
Authors: S. Jee, O. Lopez, R. Moser, A. Kutay, J. Muse and A. Calise.
In proceedings of the 19th AIAA Computational fluid dynamics conference. San Antonio, TX USA. AIAA-2009-3673.

06/2009 Aerodynamic Performance of Airfoils with Tangential Synthetic Jet Actuators Close to the Trailing Edge.
Authors: O. Lopez, D. Brzozowski, A. Glezer and R. Moser.
In proceedings of the 19th AIAA Computational fluid dynamics conference. San Antonio, TX USA. AIAA-2009-3674.

06/2010 Delayed Detached Eddy Simulation of Aerodynamics Controls with Synthetic Jets.
Authors: S. Jee, O. Lopez and R. Moser.
In proceedings of the 5th European conference on computational fluid dynamics (ECCOMAS). Lisbon, Portugal.

07/2010 A Tangential Synthetic Jet Model Based on Reynolds Stress Field for Flow Control Simulation of an Airfoil.
Authors: O. Lopez, S. Jee, D. Brzozowski, A. Glezer and R. Moser.
In proceedings of the 5th AIAA flow control conference. Chicago, IL, USA. AIAA-2010-4581.

08/2010 Computational Modeling of Synthetic Jets.
Authors: D. Duran and O. Lopez.
In proceedings of COMSOL Conference 2010. Boston, MA USA.

10/2010 Simulación del flujo alrededor de un perfil alar NACA4415 con flap tipo Gurney (in Spanish).

Authors: D. Puerto and O. Lopez.
In proceedings of II South american congress on computational mechanics. Mecánica computacional, Volume XXIX. pp.5021-5042, Argentina.

11/2010 Stall control simulation with an impulse jet.
Authors: S. Jee, R. Moser and O. Lopez.
In proceedings of 63th Annual Meeting of the Division of Fluid Dynamics (American Physical Society), Long Beach, CA, USA.

06/2011 Computational Model for the Dynamic Analysis of a Two-Dimensional Airfoil with a Control Surface.
Authors: R. Jimenez and O. Lopez.
In proceeding of 20th AIAA Computational fluid dynamics conference. Honolulu, HI, USA. AIAA-2011-3846.

07/2011 Numerical Study of Impulse Actuation for Stall Control.
Authors: S. Jee, O. Lopez and R. Moser.
In proceedings of ASME-JSME-KSME joint fluids engineering conference 2011. Hammatsu, Japan.

08/2011 New Insights toward the Influence of Agglomeration on Dust Dispersion and Related Effects on the Ignitability and Explosivity of Sub-Micronic Powders.
Authors: C. Murillo, A. Vignes, O. Lopez and F. Muñoz.
In proceedings of 3rd CCPS Latin American Process Safety Conference and Expo. Buenos Aires, Argentina.

08/2011 Comparación de Diferentes Modelos de Turbulencia en Aplicaciones Aerodinámicas (in Spanish).
Authors: D. Arbelaez and O. Lopez.
In proceedings of VIII Congreso colombiano de métodos numéricos. EAFIT. Medellin, Colombia.

10/2011 Variational Formulation for Smoothed Particle Hydrodynamics Method on GPU.
Authors: L. Ramirez and O. Lopez.
In proceedings of II International Conference on Particle-Based Methods-Fundamentals and Applications. Barcelona, Spain.

11/2011 Numerical Study for Separation Control Mechanism of Impulse Actuation.
Authors: S. Jee, R. Moser and O. Lopez.
In proceedings of 64th Annual Meeting of the Division of Fluid Dynamics (American Physical Society), Baltimore, MD, USA.

04/2012 Caracterización de combustibles sólidos con ayuda de herramientas de simulación CFD (in Spanish).
Authors: C. Murillo, A. Vignes, O. López, L. Perrin, O. Dufaud and F. Muñoz.

In proceeding of II Congreso regional de la sociedad para el análisis de riesgos - (SRA-LA 2012). Bogota, Colombia.

06/2012 A computational tool for unsteady aerodynamic flow simulations coupled with rigid body dynamics and control.
Authors: J. Camargo, O. Lopez and N. Ochoa.
In proceeding of 30th AIAA Applied Aerodynamics conference. New Orleans, LA, USA. AIAA-2012-3034.

06/2012 Numerical Simulation of NASA Trap-Wing Model as a Colombian Contribution to the High-Lift Prediction Workshop.
Authors: O. Lopez, N. Ochoa, S. Leguizamon, J. Mahecha, J. Escobar, R. Jimenez and S. Ramirez.
In proceeding of 30th AIAA Applied Aerodynamics conference. New Orleans, LA, USA. AIAA-2012-2921.

07/2012 Computational study of the dynamics of the flow in a gravity-driven toilet.
Authors: J. Mahecha, O. Lopez and O. Ardila.
In proceeding of ASME Fluids Engineering Summer Meeting - FEDSM2012. Rio Grande, PR, USA.

07/2012 A novel lattice Boltzmann Method formulation for an axysimmetic flow with swirl in vorticity-stream function variables.
Authors: S. Pedraza, O. Lopez and J. Toro.
In proceeding of 10th World Congress on Computational Mechanics - WCCM2012. Sao Paulo, Brazil.

09/2012 Computational study of a hybrid flow control system on a NACA 4415 airfoil.
Authors: A. Rojas and O. Lopez
In proceedings of the 6th European Congress on Computational Methods in Applied Sciences and Engineering - ECCOMAS 2012. Vienna, Austria.

09/2012 Modelaje y simulación computacional en ANSYS POLYFLOW del proceso de Moldeo por Extrusión-Soplado para polietileno de alta densidad (in Spanish).
Authors: J. Medina, O. Lopez and J. Vargas.
In proceedings of the XIII Simposio Latinoamericano de Polímeros y XI Congreso Iberoamericano de Polímeros - SLAP 2012. Bogota, Colombia.

12/2012 Accuracy and simulation speed comparison between the lattice Boltzmann method with free surface and Fluent applied to a process safety case study.
Authors: S. Rodríguez, J. Díaz, O. López and F. Muñoz.
In proceedings of the 2012 Society of Risk Analysis Annual Meeting. San Francisco, CA, USA.

05/2013 CFD modeling of nanoparticles dispersion in a dust explosion apparatus.
Authors: C. Murillo, O. Dufaud, O. Lopez, L. Perrin, A.

Vignes and F. Muñoz.
In proceedings of the 14th International Symposium on Loss Prevention and Safety Promotion in the Process Industries. Florence, Italy.

04/2013 Computational Prediction of a Vehicle Aerodynamics Using Detached Eddy Simulation.
Authors: N. Castro, O. López and L. Muñoz.
In proceedings of the SAE 2013 World Congress. Detroit, MI, USA. SAE paper 13B-0237.

06/2013 Parametric study of low Reynolds number flapping wing aerodynamics.
Authors: S. Leguizamon and O. Lopez.
In proceeding of 21st AIAA Computational Fluid Dynamics conference. San Diego, CA, USA. AIAA-2013-2954

08/2013 Influencia de Modelos de Turbulencia y del Bloqueo de la Estela en la Predicción del Desempeño Hidrodinámico de una Turbina Tipo Darrieus (in Spanish).
Authors: S. Lain and D. Meneses and O. Lopez.
In proceedings of IX Congreso colombiano de métodos numéricos. Universidad Autónoma de Occidente. Cali, Colombia.

08/2013 Computational Study of the flow around highrise buildings.
Authors: J.D. Colmenares and G. Piñeros and O. Lopez and A. Gonzalez.
In proceedings of IX Congreso colombiano de métodos numéricos. Universidad Autónoma de Occidente. Cali, Colombia.

08/2013 Vorticity dynamics of flow around cross flow water turbines.
Authors: S. Lain and B. Quintero and D. Meneses and O. Lopez.
In proceedings of IX Congreso colombiano de métodos numéricos. Universidad Autónoma de Occidente. Cali, Colombia.

06/2014 Detached Eddy Simulation of the DLR-F11 wing/body Configuration as a Contribution to the 2nd AIAA CFD High Lift Prediction Workshop.
Authors: J. Escobar, C. Suarez, C. Silva, O. Lopez, J. Velandia and C. Lara.
In proceedings of AIAA Aviation 2014 - 32nd AIAA Applied Aerodynamics Conference. Atlanta, GA, USA.

07/2014 Computational study of the rigid body dynamics of a vertical wind turbine coupled with CFD.
Authors: D. Meneses, O. López and S. Laín.
In proceedings of 6th. European Conference on Computational Fluid Dynamics (ECFD VI). Barcelona, Spain.

07/2014 Mixed finite element model implementation for a petroleum reservoir simulation.
Authors: C. Osorio and O. López.

In proceedings of 6th. European Conference on Computational Fluid Dynamics (ECFD VI). Barcelona, Spain.

06/2014 Comparison of Four Turbulence Models in the Study of a Station Wagon Aerodynamics.
Authors: C. Meneses, O. López and L. Muñoz.
In proceedings of First international conference in numerical and experimental aerodynamics of road vehicles and trains. Aerovehicles 1. Bordeaux, France.

12/2014 Validation of a CFD model for the prediction of loads in offshore structures for the oil and gas industry.
Authors: R. Medina, P. Cortes, J. Leon and O. Lopez.
Poster presented at the 6th Latin American CFD Workshop Applied to Oil and Gas Industry. Rio de Janeiro, Brasil.

04/2015 Análisis Térmico de un Amortiguador por Medio de Dinámica de Fluidos Computacional (in spanish).
Authors: J. Leon and O. Lopez.
In proceedings of VII Congreso Internacional de Ingeniería Mecánica - CIMM2015. Cartagena, Colombia.

04/2015 Predicción del Comportamiento Aerodinámico de un Vehículo Comercial Bajo un Ciclo Estándar de Conducción Urbano por Medio de Dinámica de Fluidos Computacional (in spanish).
Authors: D. Blanco, O. Lopez and L. Muñoz.
In proceedings of VII Congreso Internacional de Ingeniería Mecánica - CIMM2015. Cartagena, Colombia.

09/2015 Modelo Computacional de la Transferencia de Calor y Masa en una Torre de Enfriamiento de Tiro Inducido (in spanish).
Authors: R. Medina, O. Lopez and D. Piñeros.
In proceedings of X Congreso Colombiano de Métodos Numéricos. Cartagena, Colombia.

09/2015 Design Improvement of Cross Flow Water Turbines using CFD.
Authors: M. Taborda, O. Lopez and S. Lain.
In proceedings of X Congreso Colombiano de Métodos Numéricos. Cartagena, Colombia.

09/2015 Esquemas en métodos espectrales para la solución numérica de la ecuación de Burgers 1D (in spanish).
Authors: M. Mejia, O. Lopez and J. Escobar.
In proceedings of X Congreso Colombiano de Métodos Numéricos. Cartagena, Colombia.

02/2016 Estudio Experimental y Computacional de Reburn para Evaluar el Bagazo de Caña de Azúcar como Combustible para Reducción de Emisiones de NOx (in spanish).
Authors: M. Villate, A. Perez, G. Gordillo and O. Lopez.

In proceedings of Congreso de eficiencia y gestión energética - V CIUREE. Cartagena, Colombia.

04/2016 Experimental and Computational Study of the Aerodynamics of an Ahmed Body.
Authors: M. Davila, L. Muñoz and O. Lopez.
In proceedings of Tercer Congreso Internacional sobre Tecnologías Avanzadas de Mecatrónica, Diseño y Manufactura - AMDM 2016. Cali, Colombia.

06/2016 Numerical study of the NASA common research model in subsonic stall condition.
Authors: J. Velandia, O. Lopez and R. Jimenez
In proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering - ECCOMAS 2016. Crete, Greece.

06/2016 Solution of Partial Differential Equations in Complex Geometries Using One Domain Spectral Methods and Conformal Mapping.
Authors: M. Mejia, O. Lopez and J. Escobar.
In proceedings of the International Conference on Spectral and High Order Methods - ICOSAHOM2016. Rio de Janeiro, Brasil.

08/2016 Analysis of Aerodynamic Drag on Cycling Based on Complementary Numerical and Experimental Studies.
Authors: S. Roa, D. Ferreira, O. Lopez and L. Muñoz.
In proceedings of the ASME International Design Engineering Technical Conferences & Computers & Information in Engineering Conference IDETC/CIE. Charlotte, NC, USA

11/2016 Effect of stationary and dynamic transverse squared bars over the turbulent behavior in a channel flow.
Authors: J. Ramirez, C. Duque-Daza and O. Lopez.
In proceedings of 69th Annual Meeting of the Division of Fluid Dynamics (American Physical Society), Portland, OR, USA.

Invited Presentations

04/2003 Numerical simulation of the flow around a cylinder with vortex dynamics.
Authors: O. Lopez and J. Toro.
Presented at Encuentro de Métodos Númericos, Colombia.

05/2008 CFD study of a NACA4415 airfoil with synthetic jet control.
Authors: R. Moser and O. Lopez and S. Jee
Presented at AVOCET retreat 2008, Atlanta, GA USA.

06/2008 Simulation of active flow control with synthetic jet for micro-air vehicles.

Authors: R. Moser and O. Lopez and S. Jee.
Invited presentation at AIAA 4th flow control conference, Seattle, WA USA.

08/2009 Computational study of a NACA4415 airfoil with synthetic jet control.
Authors: O. Lopez and R. Moser.
Invited presentation at VII Congreso Colombiano de Metodos Numericos. Universidad de los andes. Bogota, Colombia.

04/2012 Application of hybrid turbulence model in the simulation of external flows.
Author: O. Lopez
Invited presentation at Universidad Autonoma de Occidente, Cali, Colombia.

02/2013 Numerical study of a lid-driven flow in a cylindrical cavity with a novel axisymmetric Lattice Boltzmann formulation.
Authors: S. Pedraza, O. Lopez and J. Toro.
Invited presentation at Advances in Computational Mechanics. San Diego, CA, USA.

06/2014 Short Introductory Course on Computational Fluid Dynamics.
Authors: O. Lopez
Invited summer course at Instituto Tecnológico y de Estudios Superiores de Monterrey, Toluca, Mexico.

09/2015 Computación paralela y de alto desempeño en mecánica computacional.
Authors: O. Lopez and D. Valbuena.
Invited presentation at II Encuentro regional de ciencias y tecnología. Universidad de Cundinamarca, Fusagasugá, Colombia.

06/2016 Wind energy in Colombia and Uniandes.
Authors: O. Lopez.
Invited presentation at Forwind Seminar. Fraunhofer institute, Oldenburg, Germany.

07/2016 Simulación del flujo turbulento alrededor de un station wagon con diferentes aproximaciones.
Author: O. Lopez
Invited presentation at Universidad Autonoma de Occidente, Cali, Colombia.

Book chapters

12/2013 Book: Alternative Energies.
Title: Design optimization of a vertical axis water turbine

	with CFD. Authors: S. Lain, O. López, B. Quintero and D. Meneses. Vol 34, pp113-139, ISBN: 978-3-642-40679-9, Springer Berlin Heidelberg.
12/2014	Book: CFD for Wind and Tidal Offshore Turbines. Title: Computational Study of the Interaction between Hydrodynamics and Rigid Body Dynamics of a Darrieus Type H Turbine. Authors: O. López, D. Meneses and S. Lain. DOI: 10.1007/978-3-319-16202-7 6, ISBN 978-3-319-16202-7, Springer International Publishing Switzerland.
03/2017	Book: Vortex Structures in Fluid Dynamics Problems. Title: Simulation of Axisymmetric Flows with Swirl in Vorticity-Stream function Variables using the Lattice Boltzmann Method. Authors: O. López, S. Pedraza and J. Toro. DOI: 10.5772/65650, 978-953-51-2944-8, InTechOpen, Rijeka, Croatia.

Memberships

American Institute of Aeronautics and Astronautics	Professional Member
Asociación Colombiana de Métodos Númericos	Professional Member
International Association of Computational Mechanics	Professional Member

Computer Skills

Languages	FORTRAN90, C
OS	Linux, Unix, Windows
Libraries	MPI, OpenMP, LAPACK, PETsC, ParMetis, HYPRE
Engineering Applications	MATLAB, Ansys/Fluent, FDS, CDP, Tecplot, LaTeX, Gridgen, OpenFOAM, SU2, ICEM, Paraview

Language Knowledge

Spanish	Native
English	Advanced
German	Basic

Other professional highlights

Journal of Fluids Engineering reviewer.

AIAA Journal reviewer.

International Journal of Materials Engineering Innovation reviewer.

Engineering Application of Computational Fluid Mechanics journal reviewer.

International Journal of Computational Fluid Dynamics reviewer.

International Journal of Computational Methods reviewer.

Journal of Marine Science and Engineering reviewer.

Journal of Aerospace Engineering reviewer.

Aerospace Science and Technology reviewer.

AIAA Turbulence Model Benchmarking Working Group member.

2nd AIAA CFD High Lift Prediction Workshop participant.

2012 ASME Turboexpo Conference reviewer.

2013 ASME 11th Fuel Cell Science, Engineering and Technology Conference reviewer.

VI Congreso Internacional de Materiales (CIM 2011) reviewer.

VIII Congreso Colombiano de Métodos Numéricos (8CCMN) scientific committe member and session chair.

Fulbright Colombia Scholarship evaluator.

Revista ingeniería y ciencia (EAFIT) reviewer.

Revista ingeniería y Universidad (Pontificia Universidad Javeriana) reviewer.

Revista técnica de ingeniería (Universida de Zulia) reviewer.

Revista Ingeniería y Desarrollo (Universidad del Norte) reviewer.

Revista UIS Ingenierías (Universidad Industrial de Santander) reviewer.

Revista Politecnica reviewer

Texas Space Grant Consortium (TSGC)/NASA design challenge reviewer.

IX Congreso Colombiano de Métodos Numéricos (9CCMN) scientific committe member and session chair.

2013 Concurso Nacional Otto de Greiff reviewer.