

CURRICULUM VITAE

Jorge Hiroshi Kurita

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Education

- PhD in Mechanical Engineering at Michigan Technological University. 2011.
Thesis: "Experimental results on gravity driven fully condensing flows in vertical tubes, their agreement with theory, and their differences with shear driven flows' boundary-condition sensitivities."
Advisor: Dr. Amitabh Narain
- MS in Mechanical Engineering at Michigan Technological University, 2007.
- BS in Electromechanical Engineering at Universidad Nacional de Asuncion, 2000.

Teaching Experience

Universidad Nacional de Asunción, San Lorenzo, Paraguay

- Principal Lecturer.
 - Aerodynamics II, Aeronautics Department 2021 - current
 - Flow Machines, Mechanics Department 2021 - current
 - Fluid Mechanics, Mechanics Department 2017 - current
 - Aerodynamics I, Aeronautics Department 2016 - 2018
 - Structures II, Aeronautics Department 2016 - 2018

Universidad Nihon Gakko, Fernando de la Mora, Paraguay

- Adjunct Professor.
 - Data Acquisition Systems, Faculty of Science and Technology 2015 - 2018
 - Computational Fluid dynamics, Faculty of Science and Technology 2015 - 2018
 - Finite Element Analysis, Faculty of Science and Technology 2015 - 2018
 - Computer Assisted Design, Faculty of Science and Technology 2015 - 2018
 - Physics I, Faculty of Science and Technology 2014 - 2015

Universidad Nacional de Itapúa, Encarnación, Paraguay

- Visiting Professor.
 - Computational Fluid Dynamics, Faculty of Engineering 2015

Stanford University, Palo Alto, California

- Instructor.
 - Johns Hopkins University Center for Talented Youth, Science and Engineering 2010

Michigan Technological University, Houghton, Michigan

- Instructor.
 - Summer Youth Program, Career Exploration Program 2009

Michigan Technological University, Houghton, Michigan

- Graduate Teaching Assistant.
 - Energy Laboratory, ME Dept 2008 - 2009
 - Fluid Mechanics, ME Dept 2007 - 2007

Universidad Nacional de Itapúa, Encarnación, Paraguay

- Assistant Professor.
 - Heat Transfer, Faculty of Engineering 2000 - 2004
 - Hydraulic Machines I, Faculty of Engineering 2000 - 2004

- Adjunct Professor.
 - Physics III, Faculty of Engineering 2003

Universidad Nacional de Asunción, San Lorenzo, Paraguay

- Teaching Assistant.
 - Physics III, Faculty of Engineering 1995 – 2004
 - Heat Transfer, Faculty of Engineering 1998 – 1999
 - Linear Algebra, Faculty of Engineering 1995 – 1996

Achievements

- Acknowledgement award as the "**Exceptional Protagonist of 2017**" by Ultima Hora newspaper in 2017, for the contribution to the Paraguayan society.
- "**Outstanding Citizen Award**" granted by the executive board of Asuncion city in 2017.
- Invited to participate in the program to the nikkei community to promote outreach about Japan by the Ministry of Foreign Affairs Japan in 2015.
- Mentoring 7 Doctoral students and 1 Master student on successfully publishing 4 conference peer reviewed papers at the Nihon Gakko University.
- Invited keynote speaker at III ENCIFA, Encontro Cientifico da Fаметro, Manaus, Brazil, November 25 - 28, 2014.
- Excellent student evaluation result for Fall 2008. **Rated top 10% instructor at Michigan Tech University.**
- Overall quality 4.9 out of 5 at www.ratemyprofessors.com.
- Established the first Renewable Energy Laboratory at the Universidad Nacional de Itapúa (UNI).
- Conducted several successful research projects on the production of Biodiesel at UNI.
- Made positive impacts on the local rural community due to the relevance of this Biodiesel project.
- Elected Graduate Student Representative at the MEEM Department in the fall of 2008.

Leadership

- Member of the Industrial Engineering and Operations Management Society (IEOM). 2020-currт
- Member of the American Society for Engineering Education (ASEE). 2009-currт
- Member of the American Society of Thermal and Fluids Engineers (ASTFE). 2017-currт
- Member of the American Society of Mechanical Engineers (ASME). 2007-currт
- Member of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. 2019-2020
- Member of the Institute of Electrical and Electronics Engineers. 2016-2018
- Member of the Society of Automotive Engineers. 2015-2018
- Member of the American Physical Society. 2009-2011
- Member of the Society of Hispanic Professional Engineers. 2007-2013
- Public Relations of the Society of Hispanic Professional Engineers. 2007-2008
- Intercultural Mentor for international students at Michigan Technological University. 2007-2008
- Make a Difference Youth Foundation E-Tutor for high school and college students. 2007
- Founder and former treasurer of the Project for the People of Paraguay Foundation (P.P.P.) 2002
International foundation with headquarter in Avon, Minnesota.
- Co-founder of the Inventor's Club at Universidad Nacional de Asunción, College of Engineering. 2002

Research Experience

Universidad Nacional de Asunción, San Lorenzo, Paraguay

- Research Director. 2016 - 2018
 - Faculty of Engineering.

- Co-PI- SmartMedia® Design Optimization using CFD for Automatic Transmission Suction Filters, a Case Study.
- Advisor - Urban Traffic Modeling by Hydraulic Flow Analogy, a Case Study.
- PI - An Overview of the First Paraguayan Near Space Exploration Using a High Altitude Balloon.
- Co-PI - HHO-Operated Hydrogen Assisted Combustion to Reduce Fuel Consumption and Emission During Hot Weather Condition - A Case Study Using 1496 cc Engine from Toyota 1NZ-FE VVT-I
- Co-PI - Thermal Processes Operational Optimization Through Avoidable and Unavoidable Exergy Destruction Evaluation, A Case Study.

Universidad Nacional de Itapúa, Encarnación, Paraguay

- Research Faculty. 2015 – 2016
 - Hydraulic fluid flow through porous media at subzero conditions.

Universidad Nihon Gakko, Fernando de la Mora, Paraguay

- Research Department Director. 2014– 2015
 - Education in Science and Engineering.

Filtran LLC, Des Plaines, Illinois, USA

- Development Engineer II. 2012– present
 - CFD analysis applied to fluid flow through porous media.
 - Filter performance optimization and filter design guide development.
 - Filter characterization and theoretical modeling.
 - Experimental and Computational Research of Non Newtonian flow through porous medium in subzero conditions.
 - Concept development of pleated media design, and smart media® design.

Michigan Technological University, Houghton, Michigan, USA

- Graduate Research Assistant. 2004 – 2010
 - Experimental research conducted on investigation of internal condensing flow inside a vertical tube. (NASA Grant)

Universidad Nacional de Itapúa, Encarnación, Paraguay

- Research Director. 2003 – 2004
 - Principal Investigator for the designing, mounting, installing and developing of an experimental chemical reactor, and its pilot plant with the capacity to produce methyl or ethyl ester (Biodiesel).

Professional Experience

Space Agency of Paraguay, Asunción, Paraguay

- Director of Planning and Project Management. 2017–2019
 - CubeSat, Space Education and High Altitude Ballooning.

Universidad Nacional de Asunción, San Lorenzo, Paraguay

- Chair, Mechanics Department. 2017 – 2019
 - Faculty of Engineering.
- Research Director. 2016 – 2017
 - Faculty of Engineering.

3K Engineering, Asunción, Paraguay

- Consultant. 2014 – 2016
 - Filter performance simulation.
 - Product development.
 - Power transmission structure optimization.

Filtran LLC, Des Plaines, USA

- Development Engineer. 2011 – 2012
 - Filter performance test procedure and test setup development.
 - Lab test equipment re-engineering for enhancing measurement accuracy and repeatability.
 - Test data to CFD data correlation development.

Tecnoelectric S.A., Asunción, Paraguay

- Job Site Engineer. 2002 – 2003
 - Supervising of the electrical upgrade of the United States Embassy in Asunción.

Agroenergías S.R.L., Obligado, Paraguay

- Energy Consultant. 2002
 - Responsible for the designing, mounting, and developing of an experimental chemical reactor, to produce methyl or ethyl ester from coconut oil.

Corposana S.A., Asunción, Paraguay

- Project Supervisor 1999
 - In charge of the upgrade project for the water treatment plant at Viñas Cue, Paraguay.

Invited Workshops and Congress

“2nd Thermal and Fluids Engineering Conference (TFEC) 2017 - 4th International Workshop on Heat Transfer (IWHT) 2017” Las Vegas, Nevada, USA. 2017
Organized by the American Society of Thermal and Fluid Engineers.

“Interpore 2016 - 8th International Conference on Porous Media & Annual Meeting” Cincinnati, Ohio, USA. 2016
Organized by the International Society for Porous Media.

“The ENCIFA - Encontro Científico da Fаметro e I Seminário Internacional Sobre Pesquisa, Ensino e Extensao” Manaus, Brazil. 2014
Organized by Facultad Metropolitana of Manaus (FAMETRO).

“The 18th World Energy Congress” Buenos Aires, Argentina. 2001
Organized by the World Energy Council (WEC).

“Conservation and Energy Efficiency” Foz do Iguaçu, Brazil. 2001
Organized by the Internal Commission of Energy Conservation (CICE) and ITAIPU.

“The VIII Latin America Workshop on Plasma Physics” Tandil, Argentina. 1998
Organized by the National University of Buenos Aires Center Province (VIII LAWPP).

“Solar Electric Energy” Asunción, Paraguay. 1996
Organized by the Argentinean Fund of Horizontal Cooperation and the National Institute of Technology and Standards.

Fellowships and scholarships

FULBRIGHT Scholarship, Houghton, Michigan. 2004
To pursue graduate school at Michigan Technological University.

WEC Fellowship, Buenos Aires, Argentina. 2001
To represent Paraguay at “2001 World Energy Congress”.

DAAD (Deutsch Akademischer Austausch Dienst) Scholarship, Darmstadt, Germany. 1998/2000 To attend workshops on electric drives, maneuverable systems using PLC and material testing at the Fachhochschule Darmstadt.

VIII LAWPP Fellowship, Tandil, Argentina. 1998
To attend the advanced course on Plasma Physics.

Skills

Languages.

- Spanish, English, Japanese, Italian, and German.

Programming.

- Solidworks 2018, Labview 8.2, Matlab R14, EES 8.172

Journal Articles

Kurita, J. H., M. T. Kivisalu, S. Mitra, and A. Narain: “Experimental Results on Partial and Fully Condensing Flows in Vertical Tubes, Their Agreement with Theory, and Results on Exit-Condition Sensitivity,” International Journal of Heat and Mass Transfer, February 2011.

Narain, A., S. D. Kulkarni, S. Mitra, **J. H. Kurita**, and M. Kivisalu: “Internal Condensing Flows in Terrestrial and Micro-gravity Environments – Computational and Ground-based Experimental Investigations of the Effects of Specified and Unspecified (Free) Conditions at Exit,” Annals of New York Academy of Sciences, Interdisciplinary Transport Phenomena in Space Sciences, Vol. 1161, pp. 321-360, 2009.

Narain, A., **J. H. Kurita**, M. Kivisalu, S. D. Kulkarni, A. Siemionko, T. W. Ng, N. Kim, and L. Phan: “Internal Condensing Flows Inside a Vertical Pipe – Experimental/Computational Investigations of the Effects of Specified and Unspecified (Free) Conditions at Exit,” ASME Journal of Heat Transfer, pp. 1352-1372, October, 2007.

Narain, A., L. Phan, X. Wang, **J. H. Kurita**, A. Siemionko, T. W. Ng, and S. D. Kulkarni: “Direct Computational Simulations and Experiments for Film Condensation inside Tubes and Channels,” Annals of New York Academy of Sciences, Interdisciplinary Transport Phenomena in Space Sciences, Vol. 1077, pp. 471-507, 2006.

Narain, A., L. Phan, X. Wang, **J. H. Kurita**, A. Siemionko, T. W. Ng, and S. D. Kulkarni: “Direct Computational Simulations and Experiments for Film Condensation inside Tubes and Channels,” Annals of New York Academy of Sciences , Interdisciplinary Transport Phenomena in Space Sciences, Vol. 1077, pp. 471-507, 2006.

Conference Proceedings

Coronel, C. D., Mosqueda, M. L., Vega, B. F., Stalder, D. H., & **Kurita, J. H.**: “Building 1U CubeSat as a Tool to Promote Project-Based Learning in Paraguay, a Case Study.” ASEE Virtual Annual Conference Content Access, July 26-29, 2021

Limousin, M. A., Ferreira, N., Centurión, L., & **Kurita, J. H.**: "Ventilation CFD analysis at a pharmaceutical plant as a tool for air safety verification under COVID19 context, a case study." ASTFE Digital Library. Begel House Inc., 5-6th Thermal and Fluids Engineering Conference (TFEC), May 26-28, 2021

Kurita, J., Limousin, M., Ferreira, N., & Ozuna, J.: "CFD Analysis on Air Ventilation at a Manufacturing Plant as a Tool for Designing Machine Layout, a Case Study." 5th North American International Conference on Industrial Engineering and Operations Management, Detroit, Michigan, USA, August 10-14, 2020

Kurita, J. H., Coronel, D. O., & Bogado, L. D. M.: "CanSat Pico-satellite building workshop as an effective tool for STEAM education, a case study." ASEE Virtual Annual Conference Content Access, June 22-26, 2020

Chamorro, O. M. G., Balbuena, G. R. S., & **Kurita, J. H.**: "Engagement in Practice: Final Design Projects on High-altitude Balloon Payload, Integrated with Low-cost Open Source Hardware, a Tool for STEM Education in Rural Paraguay—a Case Study." ASEE Annual Conference & Exposition, Tampa, FL, USA, June 15-19, 2019

Jara, A., Kanazawa, F., Vielman, L., & **Kurita, J.**: "An overview of the first Paraguayan near-space exploration using a high altitude balloon." ICAS2018, Proceedings of the 31st Congress of the International Council of the Aeronautical Sciences, Belo Horizonte, Brazil, September 09-14, 2018

Villalba, A., Marazzi, A., **Kurita, J.**: "HHO-Operated hydrogen assisted combustion to reduce fuel consumption and emission during hot weather condition - A case study using 1496 cc engine from Toyota 1NZ-FE VVT-I." TFEC-IWHT2017-17745, Proceedings of the 2nd Thermal and Fluid Engineering Conference, TFEC2017 4th International Workshop on Heat Transfer, IWHT2017, Las Vegas, NV, USA, April 2-5, 2017

Bello, R., Mendoza, F., Alviso, D., **Kurita, J.**: "Thermal processes operational optimization through avoidable and unavoidable Exergy destruction evaluation, A case study." TFEC-IWHT2017-18462, Proceedings of the 2nd Thermal and Fluid Engineering Conference, TFEC2017 4th International Workshop on Heat Transfer, IWHT2017, Las Vegas, NV, USA, April 2-5, 2017

Buzarquis, E., Amarilla, R., **Kurita, J.**, Baran, B.: "Space exploration in Paraguay: The first satellite mission, a historical review." Proceedings of the 1st IAA Latin American Symposium on Small Satellites: Advanced Technologies and Distributed Systems, Buenos Aires, Argentine, March 7-10, 2017

Kurita, J. H., A. Narain, M. T. Kivisalu: "Experimental study on condensation heat transfer inside a single vertical tube," Paper HK.00005, 62nd Annual Meeting of the APS Division of Fluid Dynamics Volume 54, Number 19, Minneapolis, Minnesota, November 22-24, 2009.

Mitra, S., A. Narain, S. D. Kulkarni, **J. Kurita**, M. Kivisalu, and M. M. Hasan: "Shear Driven and Gravity Driven Annular/Stratified Internal Condensing Flows," Keynote Lecture, Paper Number ITP-09-75, Proceedings of International Transport Phenomena VI: Fluid, Thermal, Biological, Materials and Space Sciences, Volterra, Italy, October 4-9, 2009.

Mitra, S., A. Narain, S. D. Kulkarni, R. Naik, and **J. H. Kurita**: "Annular /Stratified Internal Condensing Flows in Millimeter to Micrometer Scale Ducts," Invited Lecture, MNHMT 2009-18507, Proceedings of ASME 2nd Micro/Nanoscale Heat & Mass Transfer International Conference, Shanghai, China, December 18-22, 2009.

Narain, A., S. Kulkarni, M. Kivisalu, **J. H. Kurita**, S. Mitra: "New Experimental and Computational Results for Macro- and Micro-scale Internal Condensing Flows," Published in ECI International Conference Proceedings CD on Heat Transfer and Fluid Flow in Micro-scale III, Whistler, Canada, September 21-26, 2008.

Narain, A., S. D. Kulkarni, S. Mitra, **J. H. Kurita**, and M. Kivisalu: "Internal Condensing Flows in Terrestrial and Micro-gravity Environments – Computational and Ground-based Experimental Investigations of the Effects of Specified and Unspecified (Free) Conditions at Exit." Submitted for publication in the Proceedings

of Interdisciplinary Transport Phenomena V: Fluid, Thermal, Biological, Materials and Space Sciences, Bansko, Bulgaria, October 14-19, 2007.

Kurita, J. H., A. Narain, M. T. Kivisalu, A. Siemionko, and S. D. Kulkarni: "Internal Condensing Flows inside a Vertical Pipe – Experimental/Computational Investigations of the Effects of Specified and Unspecified (Free) Conditions at Exit," Paper IMECE2007-41306, published in IMECE07 Proceedings (CD) for Symposium on Gas Liquid and Phase Change Flows, Seattle, Washington, November 11-16, 2007.

Narain, A., A. Siemionko, T. W. Ng, **J. H. Kurita**, N. Kim, K. Opella, and P. O. Sweger: "Internal Condensing Flows Inside a Vertical Pipe – Experimental/Computational Investigations of Effects of Constrained and Natural Exit Conditions," ASME IMECE05 proceedings paper IMECE2005-80441, HTD-1A, Symposium on Gas Liquid and Phase Change Flows, Orlando, Florida, November 5-11, 2005.

Narain, A., X. Wang, L. Phan, A. Siemionko, T. Ng, and **J. H. Kurita**: "Film Condensation inside Tubes and Channels-Direct Computational Simulations and Experiments," Accepted for publication in the Proceedings of International Conference on Computational & Experimental Engineering and Sciences, Chennai/Jaipur, India, December 8-10, 2005.

Oral Presentation in Congress

Kurita, J. H., Khalil, A.: "Non-Newtonian behavior of automatic transmission fluid at subzero conditions," presented at the 8th International Conference on Porous Media & Annual Meeting, Cincinnati, Ohio - May 8-12, 2016.

Acosta, C., **Kurita, J.**, Acosta, C., Llano, L., Llano, Z., Ledesma, T.: "Paraguay, Campeón Mundial en Ahorro de emisión de CO2 per cápita por Generación Hidroeléctrica." 8vo. Congreso Consejo Europeo de Investigaciones Sociales en América Latina: CEISAL 2016, Salamanca, Spain, June 28 - July 1, 2016

Work in Progress

Kurita, J.: "Non-Newtonian fluid apparent viscosity calculation, based on thin porous media face velocity, an experimental correlation from transmission fluid filtration industry."

Kurita, J., J. Cuevas: "SmartMedia® Design Optimization using CFD for Automatic Transmission Suction Filters, a Case Study."

Recalde, J., **J. Kurita:** "Urban Traffic Modelling by Hydraulic Flow Analogy, a Case Study."

Kurita, J. H., A. Khalil: "Effective viscosity dependence on interfacial shear rate in fluid flow through porous media at subzero conditions in hydraulic fluids," proposal to be submitted to American Filtration and Separation Society and Society of Automotive Engineers.

Jara, A., **Kurita, J.:** "Low Cost Open Source Hardware And Software Technologies, Integrated As A Payload In A High Altitude Balloon, A Tool For Steam Education In Paraguay, A Case Study." IAC18- IAC-18,E1,IP,25,x46349, 69th International Astronautical Congress, Bremen, Germany, October 1-5, 2018 (accepted for presentation)