ARTURO S. LEON, Ph.D., P.E., D. WRE

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PROFESSIONAL SUMMARY

Hydraulic engineer with 25+ years of pioneering research, academic leadership, and industry contributions in sewer systems, gravity-driven and pressurized pipe flows, and transient hydraulics. Internationally recognized for advancing the science of storm and combined sewer systems, particularly in understanding sewer geyser phenomena, optimizing sewer overflow management, and enhancing urban drainage resilience using numerical and data-driven modeling tools. Author of over 100 peer-reviewed papers and lead developer of innovative frameworks that combine physical modeling with AI-driven control of sewer infrastructure.

EDUCATION

Ph.D., Civil and Environmental Engineering
University of Illinois at Urbana-Champaign, IL (2002–2007)
M.S., Hydraulic Engineering (Honors)
National University of Engineering, Peru (1998–2000)
C.E., Civil Engineering (Outstanding Thesis)
National University of San Cristobal de Huamanga, Peru (1998)
B.S., Civil Engineering (Honors)
National University of San Cristobal de Huamanga, Peru (1992–1996)

ACADEMIC EXPERIENCE

Associate Professor, Florida International University (2018–Present)
Associate Professor, University of Houston (2016–2018)
Assistant Professor, Oregon State University (2011–2016)
Postdoctoral Research Associate, University of Illinois (2007–2009)
Graduate Research Assistant, University of Illinois (2002–2007)

NON-ACADEMIC EXPERIENCE

Staff Hydrologic and Hydraulic Engineer, Knight Piésold Consulting, Peru (2000–2002)
Staff Hydraulic Engineer, COSAPI S.A., Peru (1999–2000)
Assistant Hydraulic Engineer, Agua y Agro Asesores, Peru (1998)

RESEARCH FOCUS

- Transient mixed flows in storm and sewer systems
- Geyser phenomena in surcharged sewer systems
- Combined Sewer Overflow (CSO) modeling and reduction
- Sewer network modeling under pressurized and gravity conditions
- AI-enhanced predictive control for urban drainage
- Coupled Computational Fluid Dynamics (CFD) and physical modeling of pipe flow dynamics

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SELECTED PEER-REVIEWED PUBLICATIONS

- Leon, A. S., et al. (2024). A finite volume model for sewer system simulations. *Journal of Hydraulic Research.*

- Sharifi, A., Leon, A. S., et al. (2025). Dynamics of violent geysers in storm sewer systems. *Journal of Hydraulic Research*.
- Zanje, S. R., Leon, A. S. (2024). Field-scale geysers in storm sewers via 3D numerical modeling. *Processes*.
- Yin, Z., Leon, A. S., et al. (2025). Robust reinforcement learning for sewer system optimization under uncertain rainfall. *Journal of Hydrology*.
- Leon, A. S., et al. (2006-2010). Series of foundational papers on Godunov-type solutions for transient flows in sewer systems. *Journal of Hydraulic Engineering*.
- Leon, A. S., & Choi, Y. (2013). Surcharged flows in steep-slope sewer systems. *Journal of Hydraulic Engineering*.

BOOKS

- Leon, A. S. (2009). *Improved Modeling of Transient Flows in Storm-Sewer Systems*. VDM Verlag.
- Leon, A. S., Coronado, F. (1998). *Hydraulic Design of Bottom Rack-Type Intake in Supercritical Regime*. Lima, Peru.

CONFERENCE HIGHLIGHTS (Selected)

- Leon, A. S. (2024). New insights on geysers in sewer systems. *ASCE-EWRI World Environmental & Water Resource Congress*.
- Zanje, S. R., Leon, A. S. (2024). Sewer geyser retrofitting strategies. *ASCE-EWRI Congress*.
- Sharifi, A., Leon, A. S. (2023). Predictive modeling of air-water eruptions. *ASCE-EWRI*.
- Leon, A. S. (2019). Upper limit velocity of geysers in sewer systems. *ASCE-EWRI Congress*.

MAJOR PROJECTS (Selected)

- **Illinois Transient Model (ITM):** Co-developed a cutting-edge model for transient flow simulation in combined sewer networks under mixed free-surface/pressurized regimes (https://web.eng.fiu.edu/arleon/ITM.htm).
- **Geyser Modeling Framework:** Led experimental and numerical research on geyser eruptions in vertical shafts, guiding safety retrofits in aging urban infrastructure (https://web.eng.fiu.edu/arleon/Project_NSF_Geysers.html).
- **Smart Storage Operation System:** Developed AI-integrated frameworks for dynamic water release in gravity-driven storage networks, optimizing CSO reduction and flood mitigation (https://web.eng.fiu.edu/arleon/Projects_FloodControl.html).

TEACHING & MENTORSHIP

- Courses: Fluid Mechanics, Open Channel Hydraulics, Urban Hydrology, Sewer Design, Unsteady Flows in Rivers and Pipe Networks
- Mentored 20+ graduate students on CSO management, sewer geysers, and urban flood control

HONORS & AWARDS (Selected)

- **Best Paper Award,** Environmental and Water Resources Institute (EWRI), American Society of Civil Engineers (ASCE), for "Physics-Informed Neural Network Approach for Solving the One-Dimensional Unsteady Shallow-Water Equations in Riverine Systems," May 2023.
- **Best Paper Award,** Environmental and Water Resources Institute (EWRI), American Society of Civil Engineers (ASCE), for "A Feasibility Study on Harvesting Rainwater from Large Solar Panel Canopies to Supplement Makeup Water for Cooling Towers by Using Remotely Controlled and Self-Cleaning Rain Cistern," June 2021.
- **Diplomate, Water Resources Engineer (D.WRE),** American Academy of Water Resources Engineers (ASCE), 2014.
- **Environmental Protection Agency (EPA) Early CAREER Award,** 2012.