José Leonardo Robles Rodríguez

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PROFESSIONAL SUMMARY

Physicist and instrumentation engineer with 7 years of experience in optical systems, energy efficiency, applied mathematics, sensor networks, and data analytics. Specialized in developing and deploying environmental monitoring hardware and software in tropical conditions. Track record leading R&D projects exceeding US $140 K, mentoring graduate and undergraduate engineers, and integrating Python/shell data pipelines for monitoring sensing. Seeking to apply scientific rigor and system-integration expertise to large-scale technology programs.

CORE COMPETENCIES

Instrumentation design, statistics, computational and electronics systems integration, light sensor calibration, data pipelines, non-parametric statistics, signal processing, team leadership, environmental monitoring, remote sensing, and project management.

PROFESSIONAL EXPERIENCE

2023 – Present *National Institute for Advanced Science (INDICATIC), Panama City, Panama*

Research Scientist – Optical & Environmental Instrumentation

- Directed the design and deployment of the first light-pollution and atmospheric monitoring network across the Panama Canal basin.
- Engineered tropicalized protective housings and control systems for optical sensors; integrated electronics, firmware, and Python data pipelines achieving 85 % uptime in high-humidity conditions.
- Supervised and trained teams of graduate and undergraduate engineers in system assembly, calibration, and maintenance.
- Led cross-institutional collaborations for sampling area with help of the Smithsonian Research Tropical Institute and NASA (low altitude flight over the Panama Canal basin).
- Authored peer-reviewed papers on optical sensing and data-driven on light pollution (MDPI Remote Sensing 2021; JQSRT under review 2025).

2022 – Present *Light Pollution and Energy Efficiency Consultancy Services (LPEECS), Panama City, Panama*

Founder – Scientific Consultant

- Perform scientific quantification of outdoor light waste for large infrastructures using radiance measurements, spectral analysis, and AI based diagnostics.
- Calculate real energy losses in watts per square meter and translate them into yearly monetary costs, supporting investment decisions with saving energy plans.
- Provide diagnostic reports and lighting efficiency strategies for business campuses, industrial zones, ports, private communities, and public institutions.
- Advise clients on regulatory compliance, sky glow mitigation, and sustainable lighting design while preserving safety and operational needs.

2016 – 2018 University of Panama, Panama City
Junior Lecturer – Thermodynamics

- Taught simulation-based thermodynamics using Python for 25 undergraduate students.

2016 – 2017 Smithsonian Tropical Research Institute (STRI), Panama City
Research Assistant – Acoustic Signal Analysis

- Applied Daubechies wavelet transforms to identify transient signals from manatees in noisy aquatic environments, improving detection accuracy by 30 %.
- Automated hydrophone data workflows using Python (SciPy, NumPy, Matplotlib, PyWavelets).

2014 – 2015 Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Vienna HQ / RN-50 Panama
Data Engineer Intern – Radionuclide Monitoring

- Managed MySQL databases for radionuclide station RN-50; implemented quality-control scripts and reporting dashboards.

2013 National Agency for Radioactive Waste Management (ANDRA), Paris, France
Research Intern – Nuclear Materials

- Modeled redox species controlling radionuclide mobility in low-level waste cells.

SELECTED PROJECTS & ACHIEVEMENTS

- Principal Investigator, FID2024-074 (SENACYT) – "Spectral and Aerosol Monitoring across the Panama Canal Basin" (US $70 K).
- Principal Investigator, INDICATIC R&D – Development of optical domes and electronics control systems for tropical instrumentation (US $78 K).
- Developed a modular mini-dome (ASA polymer, servo-driven panels, and humidity control) for field instrument protection; preparing utility model patent.
- Implemented Fast Kernel Density Estimation (FastKDE) pipelines to derive multi-spectral amplification factors in night-sky brightness studies.

EDUCATION

Ph.D. Astrophysics | Complutense University of Madrid (Spain) – 2021 Dissertation: *Evolution of Light Pollution Using Measurements of Night Sky Brightness and Color in Madrid.*

M.Sc. Sustainable Nuclear Energy | IMT Atlantique, Nantes (France) – 2013 Specialization in nuclear energy systems and waste management.

B.Sc. Physics | University of Panama – 2011 Thesis on paramagnetic–ferromagnetic phase transition in Monel 500 alloy.

TECHNICAL SKILLS

Python, shell, C++, MySQL, Git, QGIS, Raspberry Pi, Unix/Linux systems (Debian, Kali), instrumentation control electronics, signal processing, modeling, data acquisition, management, and visualization.

LANGUAGES

Spanish, English,and French.