Isaac Jesán Velázquez Reséndiz

Nationality: Mexican
Academic position: Master's student in Physics, Physics Institute, UNAM
E-mail: *isaacj@estudiantes.fisica.unam.mx*
ORCID iD: 0009-0002-6162-8064
Personal Website

Academic profile

Physicist and engineer with a focus on many-body physics and light-matter interactions. My research interests extend to condensed matter and quantum fluids of light for quantum technologies. My goal is to contribute to the advancement of science through theoretical and experimental research, while expanding knowledge through teaching and conferences.

Scientific interests

- Condensed matter
- Quantum many body physics
- Quantum fluids of light
- Exciton-Polariton
- Quantum optics
- Quantum information and computing
- Quantum chaos
- Open quantum systems

Studies

- **Physics Institute, UNAM, Mexico**
  Master on physics, Prof. Yuri G. Rubo's group, August 2023 - Present
- **Renewable Energies Institute, UNAM, Mexico**
  Renewable energy engineering (9.25/10), Prof. Yuri G. Rubo, Honors distinction, 2018 - 2023
- **Jaen University, Spain**
  Exchange semester, January - June 2022
- **Quilmes National University, Argentine**
  Research internship, Prof. Santiago Manuel Garrido's group, June - August 2019

Articles

- **I. Jesán Velázquez-Reséndiz** and Yuri G. Rubo, Polarization dynamics of trapped polariton condensates with $\mathcal{PT}$-symmetry *Phys. Rev. B 109, 085312 (2024)*

Distinctions and Funding

- Master's scholarship: CONAHCYT (August 2023 - Present)
- Quantum Excellence Certificate.- IBM Quantum, 2024 Qiskit Global Summer School: The Path to Utility
- Quantum Excellence Certificate.- IBM, Quantum, 2022 Qiskit Global Summer School: Quantum Machine Learning
- Quantum Excellence Certificate.- IBM Quantum, 2021 Qiskit Global Summer School: Quantum Simulation

Experience

- **PAPIIT IN108524**: Quantum theory of polaritonic condensation and its applications, Prof. Yuri G. Rubo, *Research assistant: Theoretical and numerical analysis of the quantum properties of a polaritonic condensate through the Lindblad master equation formalism*, (2023 - Present)
- **PAPIIT 106320**: Polaritonic condensates for quantum simulation and computing, Prof. Yuri G. Rubo, *Research assistant: Theoretical analysis of the dynamics of a polaritonic Bose-Hubbard dimer with $\mathcal{PT}$-symmetry*, (2020 - 2022)
- **PAPIME PE110319**: Prototype design and Manual of experimental activities for the LIER, Prof. Jorge Alejandro Wong Loya, *Research assistant: Construction and calibration of over 50 type T thermocouples and writing laboratory manuals for permeability and heat transfer experiments*, (2019 - 2021)
- **CUAM Morelos**: Research Congress CUAM-AcMor, *Reviewer of high school projects with technological and social impact in the community of Morelos*, (May 2019)
- **Renewable Energies Institute, UNAM**: National Congress of Renewable Energies Students, *Staff*, (November 2018)

Teaching

- **Electricity and Magnetism**
  Teaching assistant: Renewable energy engineering, 2025-2
- **Classical Electrodynamics Propaedeutic**
  Teaching assistant: Admission to the Postgraduate Degree in Physical Sciences, 2024-2
- **Electricity and Magnetism**
  Teaching assistant: Renewable energy engineering, 2024-1
- **Electricity and Magnetism**
  Teaching assistant: Renewable energy engineering, 2023-2

Conferences and Posters

- Conferences
  - Etic Tlahuilli: Polariton School, *Polarization dynamics of trapped polariton condensates with $\mathcal{PT}-$ symmetry*, Physics Institute, UNAM, Mexico, June 2024
  - Morelos Science Student Seminar, *The rise of quantum computing*, Institute of Physical Sciences, UNAM, Mexico, April 2023
  - Thesis in short, *Quantum to the rescue*, Renewable Energies Institute, UNAM, Mexico, October 2022
- Posters
  - National Physics Congress, Mexican Physics Society, Mexico, October 2024
  - XIX PCF-UNAM Student Congress, Physics Institute, UNAM, Mexico, December 2023
  - Etic Tlahuilli: Polariton Meeting, Physics Institute, UNAM, Mexico, November 2023

Languages

- Programming: Python (qutip, qiskit, numpy, keras), Mathemtica, Matlab, Github
- Spanish: Native
- English: Advanced
- French: Basic
- Chinese: Beginner

Science dissemination

- The money that does not exist: Cryptocurrencies and renewable energies (in Spanish)

Skills

- Team work
- Persistence and perseverance
- Adaptability
- Fast learner and autodidact
- Honest
- Solidarity
- Passionate
- Respectful