

Alberto Ruiz-Biestro




BSc Engineering Physics – [Nano & Microstructures RG](#)

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[Website](#)

EDUCATION

- 2020 – 2024** **B.S. Engineering Physics** (*in progress*) Current GPA: 3.86
Monterrey Institute of Technology (ITESM) (Percent Grade: 96.43)
Relevant Courses: Optics (Lab and theory), Classical and Quantum Mechanics, Numerical physics, Statistical Mechanics, Electrodynamics, Solid State Physics.
TOEFL iBT Score: 108 ([contact me](#) for a .PDF copy) CEFR equivalence: C1
- Apr 2023** **Study Abroad**
[ICTP](#) & [Quantinuum](#) Quantum Hackathon in Trieste.
Relevant Courses: Quantum computing, error mitigation & correction, chemistry,

EXPERIENCE

- 2023 –** **Undergraduate Research Assistant** (ongoing) *ITESM, Physics Department*
Advisors: Flavio F. Contreras 
 - Characterization of molecular order and functional properties of wheat samples in order to determine relative crystallinity-degrees (*ongoing*).
 - Analysis of the Debye Scattering Equation and atomic Pair-Distribution Function (PDF) for structural determination of ferrispinel and Fm-3m symmetries (*ongoing*).
 - Experience handling AFM, XRD, UV-VIS, FTIR, Raman Spectrometers, as well as PVD techniques.
- 2021 – 2022** **Undergraduate Research Experience** *ITESM, Physics Department*
Advisors: Dr. Antonio Ortiz-Ambriz  Dr. Gerardo Fox  Dr. Servando López 
 - Numerical simulation of the *Nonlinear Schrodinger Equation*.
 - Soliton propagation through pseudo-spectral method (split-step Fourier).
 - Developed audio-identification algorithm in order to identify an audio recording from a microphone.
 - Application of FFT and signal-processing methods.
 - Numerical simulation of the travelling-salesman-problem through simulated annealing. Other work includes working with continuous-time Markov processes and the Lenz-Ising model.
 - Experience with *Genetic algorithms* and *Neural Networks* (see my [website](#)).
- 2021 – 2022** **Undergraduate Research Assistant** *Zambrano Hellion Hospital, ITESM, Mexico*
Advisors: Azazel Monserrat Contreras, Dr. Omar Lozano-García
 - Developed data-analysis tools for spectroscopy characterization and instrument readout.
 - Experimental synthesis of PLGA-based nano-particles for drug delivery.
 - Experience with laboratory equipment, NP-synthesis, and spectroscopy.
- 2022** **Undergraduate Project Experience** *ITESM, Physics Department*
Advisors: Blas M. Rodríguez Lara 
 - Design and modeling of Silicon-On-Insulator (etched) grating coupler.
 - Simulation of coupled waveguide geometry and light redirection onto trapped ion.

Eagle-X Robotics team.

- Designed an IR-RAMAN spectrophotometer for in-situ analysis of biosignatures.
- Presented design in [CONACES](#) 2021 exposition, organized by the Mexican Space Agency.

AWARDS AND ASSOCIATIONS

SKILLS

- [SPIE](#) Student Chapter President (2023)
- Academic Merit Scholarship (ITESM)
- Undergraduate **Quantum Computing Club** co-founder and VP
- [OSA](#) member
- **Technical Skills:** basic C/C++, COMSOL, Git, advanced Julia, \LaTeX , Linux shell, Matlab (GA & NN), and advanced Python.
- **Language Proficiency:** Spanish (Native), English (C1).
- **Soft Skills:** Creativity, leadership, fast-learner, teamwork, attention to detail.
- Visit my [webpage](#) for more projects.

ACTIVITIES AND INTERESTS

Social Services

Teaching at low income communities in Mexico.

Sports

Former state rugby player.

Other activities

Enjoy hiking, biking, and the outdoors.

Undergraduate electromagnetism course tutor.

SECONDARY EDUCATION

2019 – 2020

CAMBRIDGE INTERNATIONAL [AS & A levels](#)

Physics (grade: A)

Mathematics (A)

Spanish (A)

English (b)

Biology (c)