

# 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

## 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-Ambríz  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.
- 2020 – 2021**     **Science Team**     *ITESM, Mexico*  
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

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- **ICTP** - Invited and participated in the *Quantinuum* Quantum Hackathon (2023)
- **SPIE** Student Chapter President (2023)
- Academic Merit Scholarship (ITESM)
- Undergraduate **Quantum Computing Club** co-founder and VP
- **OSA** member

## SKILLS

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- **Technical Skills:** basic C/C++, COMSOL, Git, advanced Julia,  $\text{\LaTeX}$ , 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

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*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

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**2019 – 2020** CAMBRIDGE INTERNATIONAL [AS & A levels](#)

Physics (grade: A)

Mathematics (A)

Spanish (A)

English (b)

Biology (c)