

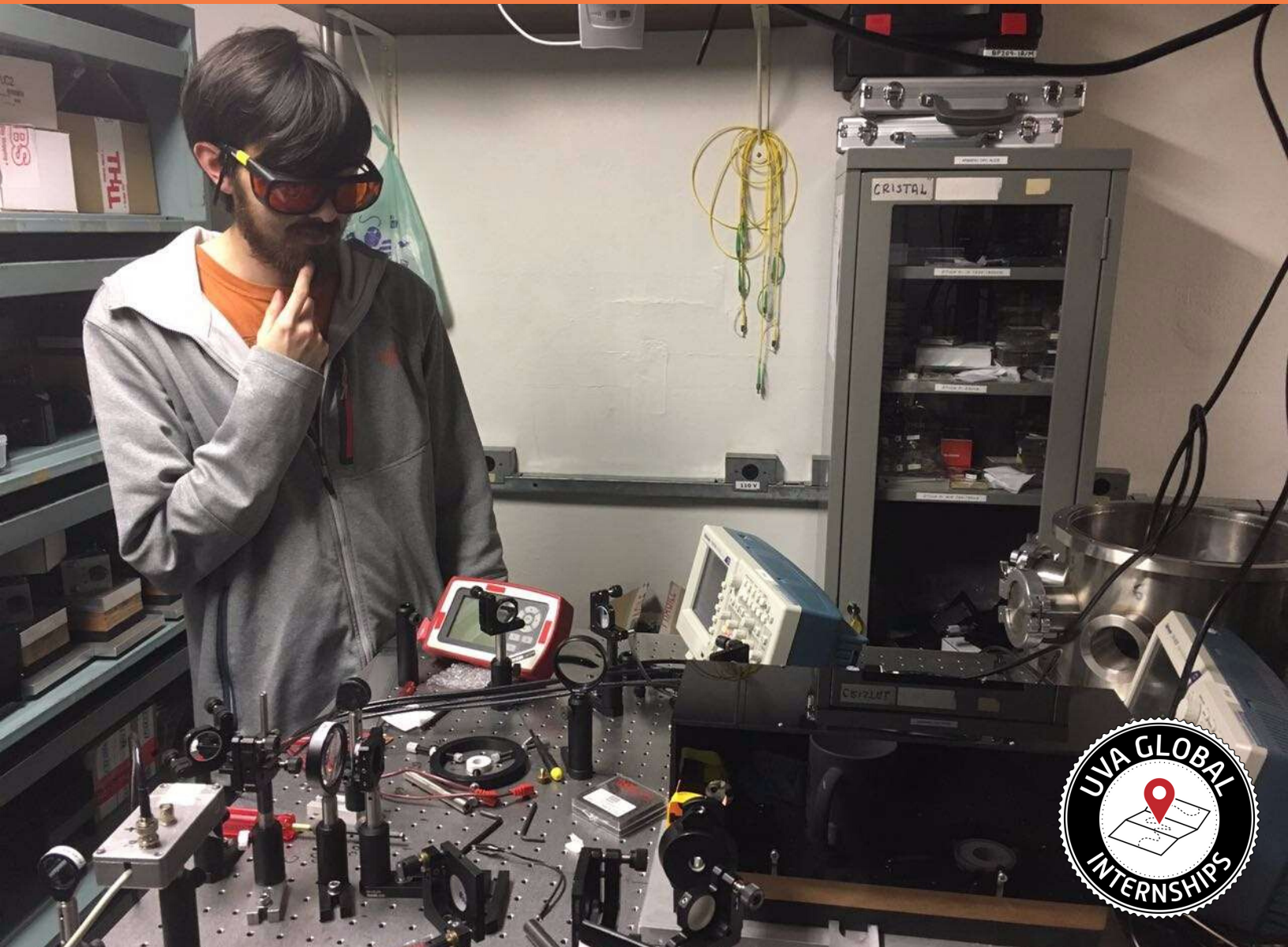
University of São Paulo - Physics Institute

São Paulo, Brazil

Application due: January 21, 2020

UVA Independent Global Internship

EXPLORE · EXPERIENCE · ENGAGE · EXCEL



University of São Paulo- Physics Institute

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21

The University of São Paulo- Physics Institute – Laboratory for the Coherent Manipulation of Atoms and Light (LMCAL) is inserted in the context of Quantum Optics, an area that consists of the fundamental study of the interaction between light and matter. The group studies the interaction of lasers with various materials (crystals, atomic gases, etc.) with the goal of determining how such interactions can be used to develop quantum information systems. The laboratory is headed by Professor Paulo Nussenzeig and Professor Marcelo Martinelli.

Internship title:

- Optical Physics Research Intern

UVA Faculty Partner:

- Professor Olivier Pfister

Description of position:

- There are many ways in which student-interns can potentially contribute to the mission of LMCAL. Areas for prospective engagement include: planning out and constructing lens paths for the purpose of manipulating lasers • upkeep of the optical path and the laser using computer software and physical cleaning tools • taking measurements of laser characteristics using various hardware (i.e. oscilloscopes, spectrum analyzers) • developing programs to be used to analyze data in various laser experiments in both Mathematica and LabVIEW.
- **What can an intern expect to learn?** This internship will provide student-interns with the valuable opportunity to gain confidence with lab-research skills and broader understandings of the process of conducting research in diverse environments.

Preferred qualifications:

****UVA requirement: All candidates must be in good academic and disciplinary standing.****

- Undergraduate Physics major with an interest in laser/optical physics.



- Applicants should possess basic lab skills acquired as part of an undergraduate lab curriculum, basic knowledge of quantum mechanics, and optics.
- Some experience with LabVIEW is a plus.
- Interns must be highly independent and self-motivated so they can successfully complete projects as assigned and as established by themselves.
- Students must be flexible and willing to contribute to the lab in whatever ways are most useful as needs arise.

Language:

- English is suitable for work in the lab. Knowledge of Portuguese (at any level) is highly recommended to facilitate social interactions and life in the city.

Dates and timings:

- Summer 2020, exact dates to be determined in consultation with LMCAL leadership, 10-12 weeks strongly preferred.

Number of positions offered:

- One

Support:

- Lab staff may offer general advice about housing and transportation.

Pre-internship preparation requirements:

- Interns must discuss their interests with LMCAL leaders prior to their arrival in Brazil. Background research and/or technical skills development may be required in advance of arrival.
- Student-interns will be strongly encouraged to engage in self-study of Portuguese in the Spring semester if not familiar with the language. Workshops will be held in the Language Lab in March and language-learning resources will be made available.

Additional information:

- If under their care, you must have your parents/guardian's permission to apply for this position before submitting an application.

Special application instructions:

- Upload an unofficial copy of your transcript along with your other application materials
- Candidates may be called for interviews with Professor Olivier Pfister

Previous interns' reflections:

I believe working at LMCAL is a worthwhile experience for any undergrad physics major with even the smallest interest in laser/optical physics. I went into Brazil with just the vaguest inkling that I had interest in the field of optical physics, and I have come back to America sure that I want to apply to the top optical schools in America. Another thing I would tell a fellow undergrad is that they should not be daunted by anything, the team in Brazil is very welcoming and willing to help, both prior to arriving at the lab and while you are working there. You should not be afraid to ask for help from a coworker, but you should



also be confident in forging ahead with any ideas you come up with. There is no way you are going to grow as a scientist if you do not put things down on the table.

~RICKY ELWELL (Summer 2017)- *Current graduate student in Physics at UCLA*

Yes [I recommend this internship to my peers]. I enjoyed the hands-on aspect of working with actual lab equipment and doing things on my own. Also seeing science done in a different country is a cool change of pace. Honestly, I had an open mind going into the experience and didn't create any expectations (other than I was going to learn new things, which I obviously did).

~ALEXANDER WENDT (Summer 2018)- *Current graduate student in Physics at University of Arizona*