

Call for Postdoctoral Fellowships

Experimental Quantum Optics & Quantum Key Distribution

Institute of Physics – Federal University of Goiás (UFG), Brazil
Funding Agency: FAPEG

Principal Investigators: Prof. Lucas Chibebe Céleri and Prof. Guilherme Luiz Zanin
Project Title: Quantum Information Technologies: Quantum Communication with Structured Light
Number of Positions: 02 (Two)
Fellowship Type: Junior Postdoctoral Fellowship (PDJ)
Monthly Stipend: R\$ 5.200,00 (Brazilian Reais, tax-free)
Duration: 12 months
Location: Goiânia, Goiás, Brazil

1. Project Description

We are seeking two highly motivated postdoctoral researchers to join the experimental team at the Center for Research in Quantum Technologies (CQT/UFG). The project focuses on the implementation of a **Quantum Key Distribution (QKD) protocol** using **single photons** and **structured light** (Orbital Angular Momentum - OAM).

The selected candidates will work on the development of the experimental setup, involving the generation, manipulation, and detection of structured light states at the single-photon level to establish secure key exchange protocols.

2. Key Responsibilities

The successful candidates will be responsible for:

- Designing and aligning optical setups involving Spatial Light Modulators (SLMs);
- Implementing single-photon sources (SPDC) to generate Bell states;
- Analyzing data and preparing manuscripts for publication in high-impact journals;
- Co-supervising undergraduate and graduate students.

3. Candidate Profile

Mandatory Requirements:

- PhD in Physics, Optical Engineering, or related fields (obtained recently);
- Strong background in **Experimental Quantum Optics**;
- Hands-on experience with single-photon counting and coincidence measurements;
- Proficiency in Python programming for hardware control, specifically for Spatial Light Modulators (SLM) used in the generation of structured light states.

Desirable Skills:

- Specific experience with structured light / OAM modes;
- Familiarity with QKD protocols (e.g., BB84, high-dimensional QKD).

4. Timeline

Event	Date (2026)
Call Launch	January 26th
Application Deadline	February 27th
Interviews (Shortlisted Candidates)	March 2nd – March 6th
Final Result	March 9th
Start Date	Immediate (upon acceptance)

5. Application Process

Interested candidates should send the following documents as a single PDF file to **guilherme_zanin@ufg.br** with the subject line "Postdoc Application - QKD - [Candidate Name]":

1. Curriculum Vitae (highlighting list of publications), or Curriculum Lattes;
2. A one-page Cover Letter describing experimental experience and motivation;
3. Recommendation letters from one or two researchers, to be sent directly via email by the researcher to **guilherme_zanin@ufg.br** with the subject line "Recommendation letter - QKD - [Candidate Name]".

*For more information, please contact **guilherme_zanin@ufg.br**.*