

# 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. Guilheme 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**

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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**

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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**

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#### **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

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

#### 5. Application Process

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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**.*