

# João Augusto Sobral da Silva

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## EDUCATION

### University of São Paulo

*Master of Science in Theoretical Physics (In progress)*

Weighted GPA: 5.00/5.00

Funding: *CAPES* via Grant No. 88887.474253/2020-00

São Carlos, SP

*Jan. 2020 – Dec. 2021*

### University of Brasília

*Bachelor of Science in Physics*

Weighted GPA: 4.15/5.00

Brasília, DF

*Aug. 2015 – Dec. 2019*

## THESIS

### Master Thesis (in progress)

*University of São Paulo*

Master of Science (Msc) in Theoretical Physics

Mar. 2020 –

*São Carlos, SP*

- Title of Thesis: *Investigating spin liquids via projected wave functions*  
Thesis advisor: Prof. Eric de Castro e Andrade  
Areas of study: strongly correlated electrons; frustrated magnetism, spin liquids, Gutzwiller projected wave functions, Monte Carlo methods.

### Undergraduate Thesis

*University of Brasília*

Bachelor of Science (Bsc) in Physics

Mar. 2018 – Nov. 2019

*Brasília, DF*

- Title of Thesis: Decay of accelerated fermions, Unruh Effect and applications in the semi-classical regime (PT<sup>1</sup>)  
Thesis advisor: Prof. Clóvis Achy Soares Maia  
Areas of study: high-energy particle physics; quantum field theory, Unruh effect, decay of protons and neutrons.

## EXPERIENCE

### Undergraduate Research Assistant

*University of Brasília*

March 2016 – March 2019

*Brasília, DF*

- Area of Study: Multi-coincidence spectroscopy, photo-fragmentation of aminoacids.  
Supervision: Prof. Dr. Alexandra Mocellin. (Mar. 2016 – Mar. 2017)  
Final Report (PT).
- Area of study: Genetic algorithms, diatomic molecules, potential energy surfaces.  
Supervision: Prof. Dr. Luiz Antônio Ribeiro Junior. (Mar. 2016 – Mar. 2017)  
Final Report (PT).

Funding: University of Brasília Foundation (FUB).

### Teacher Assistant

*University of São Paulo*

Introduction to Computational Methods (Prof. Francisco Castilho Alcaraz)

Mar. 2021 – July 2021

*São Carlos, SP*

Funding: USP

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<sup>1</sup>In brazilian portuguese only.

## Teacher Assistant (Volunteer)

University of Brasília

Calculus 1

Laboratory of Mechanics

Computational Methods A (Non-official)

Waves, Optics and Thermodynamics

Laboratory of Oscillations, Waves and Fluids

Methods of Experimental Physics

Mar. 2016 – Dec. 2018

Brasília, DF

Mar. 2016 – Jul. 2016

Mar. 2017 – Jul. 2017

Aug. 2017 – Dec. 2017

Aug. 2017 – Dec. 2017

Mar. 2018 – Jul. 2018

Aug. 2018 – Dec. 2018

## PUBLICATIONS

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### Book Chapters

- L.S.F. Olavo, **S. S. João Augusto**, FERREIRA, M. . The Schrödinger Equation Written in the Second Quantization Formalism: Derivation from First Principles. In: Valentino A. Simpao; Hunter C. Little. (Org.). Understanding the Schrödinger Equation: Some [Non]Linear Perspectives. 1ed. New York: Nova Science Publishers, Inc., **2020**, v. 2, p. 19-36. ISBN: 978-1-53617-662-9.

### Papers in Education

- L.S.F. Olavo ; S. S. João Augusto ; FERREIRA, M. . The Schrödinger equation written in the second quantization formalism: derivation from first principles. Revista do Professor de Física, v. 5, p. 24-39, 2021.

## SCIENTIFIC CONFERENCES, COURSES AND MEETINGS

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- SBF - 2021 Autumn meeting of the Brazilian Society of Physics - *Poster presentation: Chiral Spin Liquids in the Kagome Lattice* (2021);
- CCBPP - Entanglement for Strongly Correlated Systems (2021);
- ICTP - The Hitchhiker's Guide to Condensed Matter and Statistical Physics: Machine Learning for Condensed Matter (2021);
- IFSC/USP - 10<sup>a</sup> Semana Integrada da Graduação e Pós-Graduação do Instituto de Física de São Carlos: *Poster presentation: Líquidos de Spin via Construção de Partons* (2020);
- IF/UnB - 25o Congresso de Iniciação Científica da UnB e do 16o Congresso de Iniciação Científica do DF. *Poster presentation: Estudo da foto-fragmentação do aminoácido alanina nos estados de valência usando espectroscopia de multi-coincidência* (2019);
- IF/UnB - 24º Congresso de Iniciação Científica da UnB e 15º Congresso de Iniciação Científica do DF. *Poster presentation: Um Algoritmo Genético para o Ajuste de Curvas de Energia Potencial de Interações Atômicas.* (2018);
- IFT/UNESP - First Joint ICTP-Trieste/ICTP-SAIFR School on Particle Physics (2018);
- CBPF - 'XV Atividades Formativas de Verão & II Escola Professor Global'(2018);
- FUP/Planaltina - 'First School of Programming Physical Systems of PPG-CIMA' - October (2017): Lectured a one week course called 'Introduction to Fortran 90' to other undergraduate students;
- IF/UnB - 22o Congresso de Iniciação Científica da UnB e do 16o Congresso de Iniciação Científica do DF. *Poster presentation: Uma Técnica de Otimização Utilizando Algoritmos Genéticos para Encontrar Extremos de Funções* (2019);  
**Honorable mention.**
- IF/UnB – 'X Semana da Física' (October 2015), 'XI Semana da Física' (October 2016), 'XII Semana da Física' (October 2017), 'XIII Semana da Física' (October 2018).

## SKILLS AND LANGUAGES

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**Programming Languages:** Fortran, Python, LaTeX, bash/shell (basics), and brief contact with C.

**Software:** Wolfram Mathematica, Qtiplot, gnuplot, LyX, Libre Office, Microsoft Office, Inkscape.

**Libraries:** LAPACK, pandas, NumPy, Matplotlib, SciPy.

**Languages:** Brazilian portuguese (native speaker), English (advanced - TOEFL IBT 2021 score 118/120).

## COMPLEMENTARY FORMATION

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### **Topics on Unconventional Superconductivity**

*XIII Escola do CBPF*

Ministered by Prof. Dr. Mucio Continentino and Prof. Aline Ramires.

August 2021

*Online*

*Workload: 10h.*

### **Artificial Intelligence and applications in physics**

*XIII Escola do CBPF (Online)*

Ministered by Prof. Dr. Clecio de Bom.

August 2021

*Workload: 10h.*

### **Topics on Quantum Field Theory**

*University of Brasília*

Ministered by Prof. Dr. Arsen Melikyan.

Jan. 2019 - Feb. 2019

*Brasília, DF*

*Workload: 45h.*

### **Topics on Interpretations of Quantum Mechanics**

*University of Brasília*

Ministered by Prof. Dr. Olavo Leopoldino da Silva Filho.

Jan. 2019 - Feb. 2019

*Brasília, DF*

*Workload: 45h.*

### **English**

*Centro Interescolar de Línguas do Guarú (CILG)*

Workload: 654h.

2012 - 2016

*Brasília, DF*

## OTHER EXPERIENCE

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*Administrative Assistant Internship*, Banco do Brasil S. A., Brasília-DF

*Private Professor*, Self-Employed, Brasília-DF

Feb. 2014 – Dec. 2014

Jun. 2016 – Nov. 2019