João Augusto Sobral da Silva

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Last updated on October 7, 2021

Personal

Date of Birth: Dec 19, 1996

Citizenship: Brazilian

Research Interests

Theoretical and Computational Physics, Condensed Matter physics, strongly correlated systems, frustrated magnetism

Education

University of São Paulo — São Carlos, SP
Master of Science in Theoretical Physics (In progress) — *Jan. 2020 – Dec. 2021*
Weighted GPA: 5.00/5.00
Funding: *CAPES* via Grant No. 88887.474253/2020-00

University of Brasília — Brasília, DF
Bachelor of Science in Physics — *Aug. 2015 – Dec. 2019*
Weighted GPA: 4.15/5.00

Thesis

Master Thesis (in progress) — Mar. 2020 – Dec. 2021
University of São Paulo — *São Carlos, SP*
Master of Science (Msc) in Theoretical Physics

- 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 — Mar. 2018 – Nov. 2019
University of Brasília — *Brasília, DF*
Bachelor of Science (Bsc) in Physics

- Title of Thesis: Decay of accelerated fermions, Unruh Effect and applications in the semi-classical regime (PT[1])
  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 — March 2016 – March 2019
University of Brasília — *Brasília, DF*

- Area of Study: Multi-coincidence spectroscopy, photo-fragmentation of aminoacids.
  Supervision: Prof. Dr. Alexandra Mocellin. (Mar. 2018 – Mar. 2019)
  Final Report (PT[1]).
- Area of study: Genetic algorithms, diatomic molecules, potential energy surfaces.
  Supervision: Prof. Dr. Luiz Antônio Ribeiro Junior. (Mar. 2016 – Mar. 2017)
  Final Report (PT[1]).

[1] In brazilian portuguese only.

Funding: Fundação Universidade de Brasília (FUB).

Teacher Assistantship Mar. 2021 – July 2021
University of São Paulo *São Carlos, SP*
Introduction to Computational Methods (Prof. Francisco Castilho Alcaraz) Funding: USP

Teacher Assistantship (Volunteer) Mar. 2016 – Dec. 2018
University of Brasília *Brasília, DF*

Calculus 1	Mar. 2016 – Jul. 2016
Laboratory of Mechanics	Mar. 2017 – Jul. 2017
Computational Methods A (Non-official)	Aug. 2017 – Dec. 2017
Waves, Optics and Thermodynamics	Aug. 2017 – Dec. 2017
Laboratory of Oscillations, Waves and Fluids	Mar. 2018 – Jul. 2018
Methods of Experimental Physics	Aug. 2018 – Dec. 2018

Publications

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.

Skills and Languages

Programming Languages: Fortran(77, 90), Python, LaTeX, bash/shell, 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).

Awards and Scholarships

- (2021) - **Academic Excellence prize "Yvonne Primerano Mascarenhas"** for presentation on "Chiral Spin liquids in the Kagome Lattice" at 11ª Semana Integrada da Graduação e Pós-Graduação do Instituto de Física de São Carlos Carlos, IFSC-USP (Brazil).
- (2020-2021) - **Master's Scholarship** CAPES via Grant No. 88887.474253/2020-00, CAPES (Brazil).
- (2017-2019) - **Scientific Initiation Scholarship**, ProIC/FUB/CNPq-UnB (Brazil).
- (2016) - **Honorable Mention** for "Uma técnica de otimização utilizando algoritmos genéticos para encontrar extremos de funções" at 22º Congresso de Iniciação Científica da UnB e do 16º Congresso de Iniciação Científica do DF, UnB (Brazil).

Scientific Conferences, Courses and Meetings

- IFSC/USP - 11ª Semana Integrada da Graduação e Pós-Graduação do Instituto de Física de São Carlos: *Oral presentation: Chiral Spin liquids in the Kagome Lattice* (2021);
- IFSC/USP - 11ª Semana Integrada da Graduação e Pós-Graduação do Instituto de Física de São Carlos: *Poster presentation: Chiral Spin liquids in the Kagome Lattice* (2021);
- 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 - 10ª 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* (2016);
- 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).

Complementary Formation

Topics on Unconventional Superconductivity — August 2021
XIII Escola do CBPF — *Online*
Ministered by Prof. Dr. Mucio Continentino and Prof. Aline Ramires. — *Workload: 10h.*

Artificial Intelligence and applications in physics — August 2021
XIII Escola do CBPF (Online)
Ministered by Prof. Dr. Clecio de Bom. — *Workload: 10h.*

Topics on Quantum Field Theory — Jan. 2019 - Feb. 2019
University of Brasília — *Brasília, DF*
Ministered by Prof. Dr. Arsen Melikyan. — *Workload: 45h.*

Topics on Interpretations of Quantum Mechanics — Jan. 2019 - Feb. 2019
University of Brasília — *Brasília, DF*
Ministered by Prof. Dr. Olavo Leopoldino da Silva Filho. — *Workload: 45h.*

English — 2012 - 2016
Centro Interescolar de Línguas do Guará (CILG) — *Brasília, DF*
Workload: 654h.

Additional Employment Experience

Private Professor, Self-Employed, Brasília-DF — Jun. 2016 – Nov. 2019

- Autonomous private professor of mainly exact sciences to students at graduate, high, and elementary schools.
- For graduate students, I worked on disciplines such as Calculus, Linear Algebra, Physics 1-4, Programming (Fortran, C and Python), and Statistical and Error analysis of experimental data.
- For high and elementary school students the topics worked on were within Mathematics, Physics, English, and Philosophy.

Administrative Assistant Internship, Banco do Brasil S. A., Brasília-DF — Feb. 2014 – Dec. 2014

- Logistic management of electronic spreadsheets of data;
- Physical and online backup of daily product processing;
- Technical support to members of the BB Seguridade's sector.