Carlos Gafa'

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EDUCATION	
University of Malta	
Micro-credential in Intelligent Algorithmic Trading (ARI5123)	2025 - Ongoing
• Project: Determining Entry/Exit Points of a Pairs Trading Strategy Using O	nline Reinforcement
Learning	
Relevant Coursework: Reinforcement Learning (DQN, Policy Gradient, A2 Models, Technical Analysis	C), Hidden Markov
Micro-credential in Financial Engineering (ARI5122)	2024 - 2025
• Grade: 89/100	
• Relevant Coursework: PCA, Volatility Models (GARCH, GBM, RNNs), Fa	actor Investing
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University of Malta Master of Science in Euclidearing (Electrical) (Besegnet)	2024 Danding Qual
Master of Science in Engineering (Electrical) (Research)	2024 – Penaing Orai
• In conadoration with the Paul Scherrer Institute and the University of Came	mage
• Relevant Coursework: Optimization Algorithms, Inverse Methods, Data An	alysis and Statistics
University of Malta	
Bachelor of Science (Hons.) in Mathematics and Physics	2019 - 2023
First Class Honors	2017 2020
Dean's List of Science	
 Relevant Coursework: Python Physics Simulations Markov Chain Monte (Carlo Methods Data
Analysis and Statistics	Jurio Monious, Duiu
G.F. Abela – Junior College Matrice Lation Contificante	2017 2010
Matriculation Certificate	2017 - 2019
• A Levels in: Mathematics (A), Biology (A), Chemistry (A)	
WORK EXPERIENCE	
PricewaterhouseCoopers	Malta

PricewaterhouseCoopers

Data Analyst 2024/11 - Ongoing Key relevant experience:

- Data Modelling: Developed, and optimized data models for data warehousing initiatives to enhance data organization and performance.
- Report Development: Created and delivered insightful reports using tools such as Power BI to • support strategic, data-driven decisions.
- Data Cleaning Solutions: Built robust data cleaning pipelines to ensure data accuracy and ٠ consistency across multiple projects.
- Automation Tools: Development of technology driven tools to automate financial risk calculations. •
- Technologies Used: Python, SQL, Azure Data Factory, Power BI and Power Tools, Alteryx •

Paul Scherrer Institute

Physicist

During my time with the Insertion Devices group at PSI, I played a key role in the High-Temperature Superconducting Undulator (HTSU) project, wherein:

- I was involved in FEM simulations,
- I developed a shimming algorithm targeted to the HTSU's needs,
- I developed algorithms to optimize the magnetic field integrals of the HTSU,
- I contributed to data analysis throughout the project, including identifying key KPIs to characterize the HTSU, fitting flux creep models, and fitting superconductor models through inverse analysis techniques.

Additionally, I spent three weeks at the University of Cambridge, where I assisted in upgrading the HTSU's measurement system.

My work was accepted as an oral contribution at the:

- HTS Modelling Workshop 2024
- Swiss Physical Society Meeting 2024

PricewaterhouseCoopers

Data Analyst

Peer Reviewed Publications

White Dwarf envelops and temperature corrections in exponential f(T) gravity 🔗

General Relativity and Gravitation

Dec 24, 2024

Oct 10. 2024

2022/06 – 2023/09 (Seasonal)

Malta

Abstract

Compact stars have long served as a test bed of gravitational models and their coupling with stellar matter. In this work the Tolman-Oppenheimer-Volkoff equation was solved for an exponential model in f(T) gravity using Salpeter's equation of state. To obtain a more realistic behaviour, inputs from standard white dwarf evolutionary models are used to correct for core temperature and envelope thickness. Finally, constraints on the models' parameters are obtained using Markov Chain Monte Carlo methods, which are comparable to the results obtained using cosmological survey data. This consistency across the strong astrophysical and weak cosmological scales shows reasonable viability of the underlying model.

Experimental results of a YBCO bulk superconducting undulator magnetic optimization 🔗

Physical Review Accelerators and Beams

Abstract

The magnetic field optimization of RE-Ba-Cu-O (REBCO, RE=rare earth) bulk superconducting undulators is a fundamental step toward their implementation in an accelerator driven photon source, like a synchrotron or a free electron laser. In this article, we propose a sorting algorithm to reduce the undulator's phase error based on the reconstruction of the trapped current inside the bulks of a staggered array undulator. The results obtained with a YBCO short prototype field-cooled down to 10 K in a 10 T magnetic field are reported. Finally, its performance is critically discussed in light of 2D magnetic field maps of its individual components, obtained at LN2 after the magnetization tests.

Professional Certifications

Microsoft

Microsoft Certified: Azure Data Fundamentals Credential ID: D9FE60CD73CB9710

2024/11

Switzerland

2023/09 - 2024/11