MORGAN JOHN REES

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PROFILE

PhD candidate in Mathematics with expertise in computational modelling and topological solitons, seeking a quantitative researcher or C++ developer role in finance. Leveraging advanced mathematical analysis, programming proficiency in C++, Python, and specialized training in quantitative finance, I aim to develop innovative financial models and high-performance trading systems to address complex industry challenges.

EDUCATION

UNIVERSITY OF KENT *September 2017 - March 2025*

Ph.D. in Mathematics (2021-2025, Viva Pending)

Thesis titled" The Solitonic Waltz: Abelian Higgs Vortex Dynamics"

Research Skills Developed advanced computational models and applied sophisticated mathematical analysis to simulate vortex dynamics in the Abelian Higgs model, applying numerical methods and parallel computing (OpenMP).

Publications
Phys. Rev. D, 110.056050 (2024): *Scattering of Vortices with Excited Normal Modes*
Phys. Rev. D, 110.065004 (2024): *Spectral Collisions of Excited Abelian Higgs Vortices*
Phys. Rev D, 111.105021 (2025): *Dynamics of Excited BPS 3-Vortices*
Work in Progress (2025): *Vortex Dynamics Away From Critical Coupling*

MSc Mathematics and its Applications (2020-2021) - *First class Hons*

Key Modules Quantum Mechanics, Integrable Systems, Advanced Regression Modelling

BSc with Hons Mathematics (2017-2020) - *First class Hons*

Key Modules Mathematics in Finance

INVICTA GRAMMAR SCHOOL *2015-2017*

A-levels Mathematics (A*), Computer Science (A), Physics (A), Further Mathematics (B)

SIR JOSEPH WILLIAMSONS MATHEMATICAL SCHOOL *2010-2015*

11 GCSE's A to B grade*

PROFESSIONAL DEVELOPMENT

Python for Finance: **Financial Investment and Data Analytics** *(Udemy, May 2025)*

- Developed Python-based portfolio optimization and time series analysis models.

Quantitative Finance with Python (*Udemy, May 2025*)

- Built algorithmic trading models, option pricing tools, and arbitrage strategies using Python.

Financial Mathematics *(MIT OpenCourseWare, Starting June 2025)*

SKILLS

Technical	C/C++, Python, MATLAB, R, Batch, OpenMP, Monte Carlo Methods, Numerical Analysis
Finance	Financial Modelling, Algorithmic Trading, Portfolio Optimization, Risk Management
Software & Tools	LaTeX, Excel, Maple, GitHub, High Performance Computing
Transferable	Data Analysis, Problem-solving, Technical Communication, Collaboration

EXPERIENCE

Travel Insurance Facilities PLC - *Statistical Underwriter* *2019 - 2020*

Data Analysis Analyzed data using Tableau and Excel to provide detailed amendments to insurance schemes.
Completed high-level summaries for external clients outlining analysis and future projections.

Kumon Educational Japan Co. Ltd. - *Tutor* *2013 - 2018*

Teaching Tutored students aged 6-15 in Mathematics and English, improving their problem-solving abilities and academic performance over 5 years.

ADDITIONAL INFORMATION

- Developed Python and C++-based financial projects, including portfolio optimization and algorithmic trading models.
- Proficient in applying computational modelling to financial problems, with applications in derivatives pricing and risk analysis.
- Strong communicator, adept at presenting complex technical concepts to diverse audiences, as demonstrated in 10+ international conference presentations.