Thomas Kite

Cambridge, United Kingdom

+44 7492222990 tomkite57@gmail.com
thomas-kite TomKite57 Thomas Kite

SUMMARY

- PhD in Theoretical Physics with five publications – three first author.
- Strong scientific communication skills: I have presented at multiple international conferences, workshops, internal seminars and journal clubs.
- Passionate about finding computational solutions to complex real world problems.
- Motivated self-learner: I have independently undertaken reading on design patterns, completed courses on algorithms, attended machine learning workshops and frequently visit various coding puzzle websites.
- Extensive teaching experience: I have been involved teaching in Python and C++ at all the levels of undergraduate Physics at University of Manchester.

TECHNICAL SKILLS

- Proficient coding in Python and C++
- OpenMP Parallel Coding
- Unix Based Systems
- GPU Acceleration
- Mathematical Modeling
- Familiar with Bash, Julia and Javascript
- OOP Programming
- Data Visualisation
- Git Version Control
- Scientific Writing

PROFESSIONAL EXPERIENCE

Evotec **01 2023 – present day**

DevOps Engineer - In Silico Research & Development (Innovation department) *Abingdon, United Kingdom*

- Development of tools for the In Silico R&D group. This included CI/CD workflows, Kubernetes container orchestration, deploying to HPC and maintaining the central web portal to access all the groups tools.
- Developed an understanding of the fundamentals of drug discovery, biological molecules and *ab initio* computational chemistry methods.

EDUCATION

University of Manchester **08 2019 – 12 2022**

Ph.D (Astronomy and Astrophysics) *Manchester, United Kingdom*

Thesis: CMB spectral distortions and anisotropies from the primordial Universe Supervisor: Prof. Jens Chluba

- Studying future detection prospects of primordial signals originating in very early Universe. Analytically deriving equations which can then be numerically solved in a computationally feasible way – often requiring carefully optimised and multithreaded code.

University of Manchester **09 2015 – 06 2019**

M.Phys (Physics with Theoretical Physics) - 1st class (Hons) *Manchester, United Kingdom*

Thesis: Field Theory of Topological Defects Supervisor: Prof. Apostolos Pilaftsis

- Research into advanced topics of pure Mathematics (group theory, topology, differential manifolds, etc.) and their application to the study of theoretical Physics. Verification of expected phenomena via simple numerical simulations.

PUBLICATIONS

- Bridging the gap: spectral distortions meet gravitational waves **08 2021**
- Clarifying transfer function approximations for the large-scale gravitational wave background in ΛCDM **01 2022**
- Spectro-spatial evolution of the CMB I: discretisation of the thermalisation Green's function **10 2022**
- Spectro-spatial evolution of the CMB II: generalised Boltzmann hierarchy **10 2022**
- Spectro-spatial evolution of the CMB III: transfer functions, power spectra and Fisher forecasts **12 2022**

CONFERENCES

- Tehran Meeting on Cosmology at the Crossroads **02 2021**
- 2022 Cosmology session of the 56th Rencontres de Moriond **01 2022**
- *Mission: Spectro-polarimetry of the Microwave Sky* workshop **11 2022**
- Various journal clubs and internal seminars (Padova, UCL, Oxford) **10 2022 - 12 2022**

RELEVANT EXPERIENCE

University of Manchester **12 2019 – present day**
Lead developer of `CosmoTherm`*'s Anisotropy Module* *Manchester, United Kingdom*

- Refactoring and developing a C++ based Physics research code, `CosmoTherm`, to make it more modular and object oriented. As part of my refactoring I chose a code architecture more closely following the underlying mathematical formalism of Cosmological Perturbation Theory and ensured the code could be easily parallelised using OpenMP.

University of Manchester **09 2019 – present day**
Graduate Teaching Assistant *Manchester, United Kingdom*

- Supervised and aided students with coding in both Python and C++, ranging from complete beginners to experienced coders. I have taught in all undergraduate coding courses: introduction to programming for physicists, computational physics, theory computing project, object oriented programming in C++.
- As well as providing real-time hands-on help in the coding labs, my responsibilities included reviewing code, assigning grades and providing detailed written feedback to hundreds of students.

University of Manchester **07 2018 – 09 2018**
Particle Physics research internship *Manchester, United Kingdom*

- Supervised by Prof. Terry Wyatt, I performed a feasability study for detecting the tau lepton VBF interaction vertex using the ATLAS detector. This was performed using `ROOT` a large C++ code base commonly used in Particle Physics research. Writing efficient code capable of analysing and visualising large amounts of data was especially important in this project.
- I delivered a presentation on this work to the members of the Particle Physics department, and was awarded a prize for best talk.

Cheadle Hulme High School **06 2018 – 07 2018**
Teacher training internship *Cheadle Hulme, United Kingdom*

- 4 weeks receiving hands-on experience in the world of teaching Physics and Maths. This involved attending pedagogy sessions aimed at all ages and partaking in the Friday *science club* at the school.

Self Employed **2014 – 2018**
Private tutoring *Spain & United Kingdom*

- Tutoring in the fields of Maths, Physics and Chemistry in both English and Spanish. This ranged from GCSE to University. I developed key skills such as clear communication, strong leadership and the ability to explain topics effectively and efficiently from various viewpoints.

OTHER EXPERIENCE

- Fundraised with Manchester's Raise and Give (RAG) to support Childreach International. As part of a group we raised almost £60000 with our challenge to summit Kilimanjaro. For my fundraising I hosted an outreach event with Prof. Brian Cox, which sold 600 tickets, raising £2500 for the charity.
- Completed LinkedIn skill assessments for Python, C and OOP.
- Completed LinkedIn course on *C++ best practices for developers.*
- Completed a course on *Fundamentals of Accelerated Computing with CUDA C/C++.*
- Completed a course on *Fundamentals of Accelerated Computing with CUDA Python.*
- Attended the N8 CIR Machine Learning Workshop: *Introduction to Artificial Neural Networks in Python.*
- A wealth of coding experience through websites like Advent of Code, Project Euler and Rosalind.
- Completed a coure on algorithms provided by AlgoExpert.
- Created *wikiguesser.io*, a game based on guessing Wikipedia article titles from popular words within the article. This exposed me to using APIs and effective web scraping.
- I have peer reviewed articles within my field for Europhysics Letters (EPL).
- Driving license (type B)
- Languages: English (native), Spanish (fluent), Italian (learning)

REFERENCES

References available upon request.