Louis Warford

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Personal Statement

An astute, critically thinking Physics graduate with a keen interest and aptitude for computing and data analytics. After an extended hiatus due to personal and family reasons, I'm hoping to utilise my new motivation to apply myself to an interesting role I'm very eager to take on.

I have always found joy in exploring the mechanics of how things work; as well as applying my understanding to solving problems in creative ways. Throughout the various projects I took on over my course, I developed and displayed extensive research, analytical and problem solving skills; Independently designing code to model, analyse and display gathered data; and draw conclusions from the results.

Education & qualifications

2014-2018 Master of Physics, **University of Leicester**

2.1 | *Upper Second-Class Honours*

Relevant modules include: Specialist Research Project: "Modelling Elections as a Complex System", Mathematical Physics, Scientific data analysis, Numerical Programming in C, Scientific inference advanced Study Project: "Graphene strings guitar strings", 3rd year project:"Gravitational collapse in one dimension."

| Detailed List of Modules and Marks | pg.3

Specialist Research Project: "Modelling Elections as a Complex System"

I thought up this project when discussing applications of agent-based modelling with my supervisor. Here I applied the basic principles of the Ising model (a mathematical model for ferromagnetism) to a population of agents representing voters. For this project I was required to familiarise myself with Netlogo, a programming language and integrated development environment for agent-based modelling; and then utilise it to design and code a model from scratch that would try and describe, and then predict voter behaviours.

I successfully developed a model that exhibited expected, fundamental behaviour; and lay the groundwork for future development of a more precisely predicting system.

| Advisor: Prof. Derek J. Raine

Advanced Study Project: "Graphene strings guitar strings"

This project involved researching, and then compiling and condensing the found information into a summary paper. This involved extracting potential applications and relations between different research sources, to draw my own conclusions. Based upon the topic of applying new graphene materials to guitar-string development, I fully researched the mechanics behind the production of sound of a guitar and how the strings properties affect this. Then, looking at how graphene compares to currently used strings.

| Advisor: Prof. John E. Lees

Physics Special Topics

For this module our year were split into groups of four and tasked with producing a peer-reviewed journal. This involved each group submitting as many good quality 2-page articles as they could to peers to get them approved for assessment at the editorial board each week. The editorial board consisted of one member of each group (rotating each time so everyone took part) chaired by one member. They would determine whether the articles up for review that week would get published.

I fully engaged in this process and took the lead on three of our six published articles. This process tested my creativity, problem solving, reasoning, team-work, communication, and time management.

The journal can be found at:

| https://www108.lamp.le.ac.uk/ojs1/index.php/pst/issue/view/144

2007-2014 Secondary Education, **King Edwards School, Witley**

IB: 34

HL :
- Physics: 6
- Chemistry: 5
- Maths: 4

SL :
- Economics: 5
- English Literature: 6
- Latin: 6

EE and ToK: 2

GCSEs : 11

Maths, additional maths, Physics, Chemistry, and Biology at top grades with an A* to B achieved in the remaining.

Relevant Skills

My degree and personal interests have resulted in me accumulating a very good understanding of logic, statistics, and analysis. I excel at problem solving and independent research, quickly picking up new information and applying it. Much of my computing knowledge has come from independent learning, utilising the resources available to me online.

In summary:

Basic Knowledge:	PHP, HTML, CSS.
Intermediate Knowledge:	C, R, Python, mySQL, LaTeX, Linux,Excel, Word, PowerPoint, presenting, C++, Git and GitHub.
Advanced Knowledge:	Research, Data analysis, Problem solving, Teamwork and Communication, Time management, Numeracy, Reasoning, and critical thinking

Interests and Activities

Technology, Programming, Puzzles, Video games

Sociology, Psychoanalysis, Philosophy, Hockey, Squash, Travelling

Master of Physics
UoL | MPhys Academic Record

Year	Module	Mark	Credit
1	Dynamics	72	15
1	Light and Matter	80	15
1	Electricity and Magnetism	65	15
1	Waves and Quanta	75	15
1	Physics Speciality 1 • Introduction to Applied Physics • Introduction to Astrophysics • Introduction to Modern Physics	78	15
1	Mathematical Physics 1.1	82	15
1	Mathematical Physics 1.2	65	15
1	Laboratory Physics	67	15
2	Condensed Matter	65	15
2	Electromagnetic Fields	81	15
2	Scientific Inference	60	10
2	Physics Speciality Electives 2 • Intermediate Astrophysics • Intermediate Modern Physics	76	20
2	Mathematical Physics 2.1	72	15
2	Mathematical Physics 2.2	60	15
2	Laboratory Physics	70	30
3	Quantum Mechanics	69	15
3	Atoms and Nuclei	69	15
3	Radiation and Matter	76	10
3	Mathematical Physics 3	72	10
3	Physics Challenge • In teams, students solve tricky, real world problems involving some imagination, estimation and/or approximation. The teams compete to find and present the best answers in a scientific conference/debate format.	78	10
3	Physics Speciality Electives 3 • Numerical Programming in C • Elementary Particles: The Standard Model and Beyond • Quasars and Cosmology	63	30
3	Workshops and Projects 3 • **3rd Year Research Project:** "Gravitational collapse in one dimension" Using my acquired skills in C and R we were tasked with analysing a collisionless one dimensional system of particles collapsing over time. This involved analysing density via binning the particle masses to get the density profile, and describing any patterns found using various established methods of	67	30
4	Advanced Study Project • "Application of graphene in guitars strings"	78	20
4	Advanced Core Physics 1 • Quantum Theory of Solids • Scientific Data Analysis • Lasers and Quantum Optics	65	15
4	Speciality Options 4 • Supermassive Black Holes and Large-Scale Structure • General Relativity and Quantum Fields	63	30
4	Advanced Core Physics 2	50	15
4	Specialist Research Project • "Modelling elections as a complex system"	75	30
4	Physics Special Topics • "A journal of short, often fun and quirky, quantitative science articles that are written, refereed and edited by undergraduate students as part of their MPhys degree. The journal is designed to help students develop transferable skills in communication, team work, problem solving and critical reviewing." url | https://www108.lamp.le.ac.uk/ojs1/index.php/pst/issue/view/144	72	10

Total Credit	480
Credit Weighted Average	**69.84**