Personal Statement

Physics is an elegant collection of ideas and theories that attempts to explain all we observe in the most fundamental way possible. It amazes me that complex ideas such as those of General Relativity can be summed up in a mathematically beautiful design as shown by Garrett Lisi in his paper 'An Exceptionally Simple Theory of Everything'; this above all has captured my curiosity and encouraged me to pursue the subject in order to extend my understanding of the depth of our universe.

I keep up with current progress made in the field of physics and have found the research being done by General Fusion into fusion technology outside conventional magnetic confinement methods fascinating. I discovered the company when watching the TED talk 'How synchronised hammer strikes could generate nuclear fusion' and their research taught me that there are other, potentially more efficient, ways to approach the same problem. Their work prompted my interest in fusion and led me to travel to JET at the Culham Science Centre. There I learnt about the current need for efficient, sustainable energy sources and about the need to develop new materials to facilitate extreme conditions in fusion experiments. Newly developed research in fusion is laying the groundwork for future generations; ITER will be the largest fusion experiment ever conducted, and leave a legacy that could last centuries.

During my last two years at school, I have been a prevalent member of our Science Committee. I contributed prominently to the school's entry in the CERN Beamline Competition and have participated in other competitions including the British Physics Olympiad scoring a Bronze 1. Along with my time in Science Committee, I spent 10 years in the scouting association, during which time I became a Young Leader. This experience taught me the importance of communication and respect whilst working in a group which I have applied to my role in the committee.

Maths has aided my capabilities in physics. I am currently reading 'Classical Mechanics: The Theoretical Minimum' and am finding it very helpful with advanced A level topics. The book specifically strengthened my understanding of advanced differentiation and introduced me to partial derivatives. It also taught me integration by parts giving me an advantage in the coming year. I also started reading through the Feynman Lectures to ensure my understanding of key physics concepts is of a high enough standard. In addition to reading I listen to talks presented by universities on iTunes U about physics and maths; I particularly enjoyed the series 'A Mathematician's Holiday' by Oxford University because it introduced topics such as optimisation in an applied scenario.

I attended a talk by Dr Todd Huffman about the discovery of the Higgs Boson. His talk taught me what the Higgs is and how it was found. He also spoke about the need to verify the accuracy of the data and whether or not it did indeed show the existence of the Higgs particle. This showed me how data needs to be thoroughly analysed before a conclusion can be drawn. It also linked in with the hypothesis testing we cover in the statistics portion of the maths A level emphasising just how important a role maths plays. His talk about the Higgs pushed me to read further, leading me to the TED talk 'Why our universe might exist on a knife-edge'. The talk spoke of the Higgs potentially interacting with a superheavy particle, thus making everything in the universe superheavy, which would render everything a black hole. To attempt to understand how this would happen, I read about supersymmetry in the May 2014 edition of Scientific American. This process where an article or talk prompts you to read further on a topic, is one that I love; physics enables a lifetime of that curiosity.