

EE/RPPF

For use from May/November 2018

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Extended essay - Reflections on planning and progress form

Candidate: This form is to be completed by the candidate during the course and completion of their EE. This document records reflections on your planning and progress, and the nature of your discussions with your supervisor. You must undertake three formal reflection sessions with your supervisor: The first formal reflection session should focus on your initial ideas and how you plan to undertake your research; the interim reflection session is once a significant amount of your research has been completed, and the final session will be in the form of a viva voce once you have completed and handed in your EE. This document acts as a record in supporting the authenticity of your work. The three reflections combined must amount to no more than 500 words.

The completion of this form is a mandatory requirement of the EE for first assessment May 2018. It must be submitted together with the completed EE for assessment under Criterion E.

Supervisor: You must have three reflection sessions with each candidate, one early on in the process, an interim meeting and then the final viva voce. Other check-in sessions are permitted but do not need to be recorded on this sheet. After each reflection session candidates must record their reflections and as the supervisor you must sign and date this form.

First reflection session

Candidate comments:

In the first session with my tutor, we got to the idea that the extended essay should be about Hubble's Law. The purpose of the investigation would be to investigate how the increasing precision of the Hubble constant will get to better estimates for the age of the universe. My first task was to start with the theory behind Hubble's Law and start researching about the different values of the constant through time. In addition I was suggested to start researching different methods of estimating the Hubble constant, these where COBE and MWAP probes. Once this research was done, I started to investigate how the increased precision of the Hubble constant helps to get better estimates for the age of the universe and found out how it was done by the first time in 1929 by Edwin Hubble.

Date:



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**Interim reflection**

Candidate comments:

During the process of my extended essay, many problems emerged on the way. First of all was the need to research for the theory behind Hubble's Law and the age of the universe on more scientific papers instead of encyclopedias, such as Wikipedia. Secondly, the most important, was to analyze and understand these scientific papers. These papers include from Edwin Hubble in 1929 to the Hubble Space Telescope in 2019. For understanding these papers, I had to develop and learn a new method. Part of this process was to start analyzing the papers by their Abstract and Conclusions. Then if more depth in the research was needed, I proceeded to investigate the other sections of the article.

Date:

Final reflection - Viva voce

Candidate comments:

Finally once that the process of my extended essay is over, I can reflect on what was learned. I can now say that analyzing and understanding different scientific papers is not that difficult as I found out in the first place. By learning a new method that consisted in analyzing the Abstracts and Conclusions first, I was able to achieve this. Secondly, I was amazed to have learned that calculating the age of the universe is not that difficult as I thought in the first place. Once the Hubble constant was obtained, a simple calculation was done in order to estimate the age of the universe. I was satisfied, once completed the investigation, to see the different estimates for the age of the universe through time and how these increased in precision as the Hubble constant did.

Date:



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Supervisor comments:

Supervisor: By submitting this candidate work for assessment, you are taking responsibility for its authenticity. No piece of candidate work should be uploaded/submitted to the e-Coursework system if its authenticity is in doubt or if contradictory comments are added to this form. If your text in the box below raises any doubt on the authenticity of the work, this component will not be assessed.

The student delved deep into scientific papers that allowed him to make a thorough survey of the topic studied, a challenging task in itself. He was able to understand and reflect on the topic of cosmology and the related methods of measurement, reflecting appropriately on the difficulties and importance of the matter, including the math and methodology.



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