

1. Title - 10 Words Max:

- A Study of Adaptive Finite Element Methods, and its Applications.
- A Study of Functional Spaces, and Adaptive Finite Element Methods.

2. Overview/Abstract - 300 Words Max:

By definition, Partial Differential Equations (PDEs) are equations which impose relationships between the partial derivatives of a multi-variable function. Adaptive Finite Element Methods (AFEMs) are fundamental numerical instruments used to approximate PDEs, as these equations often do not have analytic/exact solutions. With these definitions in mind, the aims of this project are to first conduct a study into the Functional Spaces, such as Hilbert and Sobolev Spaces, which are relevant to the analysis of PDEs. Then, we will progress into the study of Numerical Methods induced by weak formulations of PDEs, namely, Finite Element Methods. Then finally, we will study state of the art Adaptive Finite Element Methods by researching and applying relevant numerical techniques from a survey in this topic.

3. Originality, Creativity, and Significance - 300 Words Max:

Some text

4. Potential Benefit - 250 Words Max:

Some text

5. Relevant Experience - 250 Words Max:

Some text