A STUDY AND THE USE OF LAGRANGE MULTIPLIER IN CALCULUS OF VARIATION

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MTH/11/0313

A PROJECT SUBMITTED TO THE DEPARTMENT OF MATHEMATICS, FEDERAL UNIVERSITY, OYE-EKITI, EKITI STATE IN PARTIAL FULFILMENT FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc. (Hons)) IN MATHEMATICS

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ABSTRACT

This project work examines the use of Lagrange multipliers to calculus of variation (isoperimetric problem). Basic definition of terms were given, necessary and sufficient condition for a function to be maxima or minima, how to identify Lagrange multipliers in any given problem and general usage of largange multipliers, Lagrange multiplier in unconstraint and constraint problems, theorems and proof related to Lagrange multipliers. Literature review, Euler's Multiplier rule and isoperimetric problem, proof's motivated by Euler and Lagrange, the power system economic operation. Methods of solving Lagrange function, i also included derivation of Euler- Lagrange equation and other forms of Euler equation, external calculus of variation, isoperimetric problems and method for solving extreme of a given function (minimum and maximum) were examined. Numerical examples were provided.