سامية محمد مصطفى

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية
التوثيق الالكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصل

Zagazig University

Benha Branch

Faculty of Science

Mathematics Department

INVARIANT SOLUTION OF SOME DIFFERENTIAL EQUATION

Thesis submitted

By

Reda Gamal Abd El-Rhman

In partial Fulfilment of the

Requirements for the M. SC. Degree

In "Applied Mathematics "

Supervised by

Prof. Dr. *Farouk M. El-Batanony*

Prof. of Applied mathematics

Faculty of Science

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Dr. *Effat A. Saied*

Lecturer of Applied Mathematics

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NOTE

Note

Besides the work carried out in thesis, the student has attended and successfully passed the following post graduate courses during the Academic year 1990-1991.

1- Partial Differential Equation.

2- Elasticity.

3- Fluid Mechanics.

4- Computer and Algebra.

5- Perturpation theory.

6- Mathematical Methods.

7- English language.

Head of Math. Department

Prof. Dr. S.S El-Ghabaty

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SUMMARY

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In this thesis a recent method viz " Similarity method " described by Sophus Lie, is used to find the solutions of some differential equations frequently appear in describing natural phenomena . This method has the following advantages:-

Firstly : Reducing the number of independent variables in differential equation by one .

Secondly: Finding the number of different solutions for the differential equation .

Thirdly : Knowning a previous solution for differential equation, one can construct another one.

The thesis consists of an introduction and four charpters

Their contents are as follows :

Chapter I :

In this chapter the author discussed the method under consideration and its use in finding the solutions of partial differential equations as well as producing the groups of transformation.

Chapter II :

The author used the similarity method to find different solutions in five cases for the one - dimensional Fokker Planck's equation.

Chapter III :

This chapter includes two parts; in the first one the author used the similarity method to find most of the probable solutions for the fragmentation equation, whereas in the second part, the similarity method is also used to find the different solutions for the coagulation equation.

Chapter IV :

In this chapter the author used the similarity method to find solutions for the two - dimensional Fokker-Planck equations.

CONTENTS