



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات
لم ترد بالأصل



HIGH ENERGY PROTON ***Scattering from ^{12}C and ^{16}O***

A THESIS

Submitted to the Department of Physics, Aswan
Faculty of Science, South Valley University

For the Degree of Ph. D
in Physics

By
HOSNEY MAHAMED ALY AHMED
(M. Sc in Physics)

SUPERVISED BY

Prof. Dr.
M. Y. M. Hassan
Head of Physics Department
Faculty of Science - Cairo University

Prof. Dr.
A. E. Belal
Head of Physics Department
Faculty of Science South -Valley University

Prof. Dr.
S. A. E. Khallaf
Professor of Theoretical Nuclear Physics
Faculty of Science - Assiut University

B1-45

1998

ACKNOWLEDGMENTS

ACKNOWLEDGMENTS

Thanks heaven blessing for endowing me the power and patience to complete this work.

I would like to thank Prof. Dr. A. E. Belal Head of Physics Department, Faculty of Science, Aswan, South Valley University, for his continuous help, encouragement and fatherly advice's.

My deeply thanks to Prof. Dr. M. Y. M. Hassan, Faculty of Science, Physics Department, Cairo University, for his excellent guidance, helpful discussions and continuous encouragement during the developments of this work.

I would like to thank Prof. Dr. S. A. E. Khallaf, Faculty of Science, Physics Department, Assiut University, for his supervision and encouragement.

I am very grateful to Dr. E. H. Esmael and Dr. A. Y. Ellithi, faculty of science, Physics Department, Cairo University, for their excellent guidance, helpful discussions and continuous encouragement's during the developments of this work.

I wish to express my most deep thanks and gratitude to Dr. G. A. Yahya and H. M. Aly, faculty of science, Physics Department, Aswan South Valley University, for their helps during the developments of this work.

I would like to thank all staff members of Physics department, faculty of science, Aswan South Valley University, for their care, kind help and brotherly advice's.

Hosney Mahamed Aly

CONTENTS

CONTENTS

Acknowledgments.

<i>Abstract .</i>	1
--------------------------	---

Chapter 1. General Introduction 3

1.1. <i>Introduction.</i>	3
1.2. <i>The optical potential Model.</i>	4
1.3. <i>The Deformed Optical Potential analysis.</i>	9
1-4 <i>The Brink Nuclear density distribution.</i>	12
1-5 <i>The nonrelativistic and relativistic optical potential models.</i>	14
1-6 <i>Survey of the $P + {}^{12}\text{C}$.</i>	18
1-7 <i>Survey of the $P + {}^{16}\text{O}$.</i>	20
1-8 <i>The aim of this work.</i>	22

Chapter 2. Coupled channel analysis using deformed optical model up to $L=4^+$ in the nonrelativistic approximations

2.1 <i>Introduction.</i>	24
2-2 <i>The coupling channel equation.</i>	25
2-3 <i>Phenomenological optical potential.</i>	27
2-4 <i>Folding optical potential model.</i>	29
2-4-1 <i>Gaussian density with the Gaussian amplitude.</i>	32
2-4-2 <i>Gaussian density with the Gaussian amplitude, using Pauli correlation effect.</i>	36
2-4-3 <i>Brink density with the Gaussian amplitude.</i>	37
2-4-4 <i>Brink density with the Gaussian amplitude, using Pauli correlation effect.</i>	41
2-4-5 <i>Harmonic-oscillator density with the Gaussian amplitude.</i>	43
2-4-6 <i>Harmonic-oscillator density with the Gaussian amplitude, using Pauli correlation effect.</i>	44
2-4-7 <i>Three parameters Fermi density with the Gaussian amplitude.</i>	45

2-4-8	Three parameters Fermi density with the Gaussian amplitude, using Pauli correlation effect.	47
2-4-9	Gaussian density with the Love and Franey amplitude.	48
2-4-10	Brink density with the Love and Franey amplitude.	51
2-4-11	Harmonic-oscillator density with the Love and Franey amplitude.	55

Chapter 3. Coupled channel analysis using deformed optical model up to $L=4^+$ in the relativistic approximations

3-1	Introduction.	57
3-2	Relativistic optical potential formalisms.	57
3-2-1	Gaussian density with Gaussian amplitude	61
3-2-2	Brink density with the Gaussian amplitude	64
3-2-3	Harmonic-oscillator nuclear density with the Gaussian amplitude	67
3-2-4	Three parameters Fermi nuclear density with the Gaussian amplitude	69

Chapter 4 Results and discussions.

4-1	Introduction.	71
4-2	Pearson's Chi-square test.	73
4-3	Relativistic kinematics in the nonrelativistic approach.	73
4-4	The elastic scattering for $P+^{12}\text{C}$.	74
4-5	Elastic scattering for $P+^{16}\text{O}$.	77
4-6	Inelastic scattering up to $L=2^+$.	84
4-7	Inelastic scattering up to $L=4^+$.	88
4-8	Coupling effect.	90
4-8-1	Elastic scattering.	91
4-8-2	Inelastic scattering up to $L=2^+$.	93
	Tables.	95
	Figure Captions.	114
	Figures.	126
	General conclusions.	195
	References.	204
	Arabic summary.	