

بسم الله الرحمن الرحيم

# الآية الكريمة

قال تعالى:

وَ اتَّقُوا اللَّهَ وَ يُعَدِّمْكُمْ اللَّهُ وَ اللَّهُ بِكُلِّ شَيْءٍ عَزِيمٌ {

( صدق الله العظيم )

سورة البقرة الآية (282)

# Dedication

*I dedicate this thesis*

*To my parents...*

*And*

*To my wife (Asia)*

# Acknowledgment

*I would like to express my gratitude to the Sudan University of Science and technology , college of science, graduate collage and department of physics for Hospitality and encouragement .*

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# Abstract

Mass and charge generation mechanisms are one of the challenging problems in field theories. The mass generation cannot be achieved by Higgs mechanisms, according to generalized special relativity, as far as masses depend on the field variables, This need modification of the transformation function to generate mass. Many attempts were made to solve mass and charge generation. In this work a new second order lagrangian is suggested. This lagrangian gives the ordinary Maxwell equations beside the ordinary Hamiltonian with additional term representing the field generated or absorbed by charge particles beside the ordinary term representing the energy frozen in charges. This Hamiltonian, in free curved spaced permeated by electric field is used to find an expression for quantized charge which have two quantum numbers, that can be adjusted freely to predict charges of all elementary particles. The charges quantization having similar forms are obtained by using mass self energy and oscillating string model and Klein-Gordon equation solution for particle in a box and for string.

# المستخلص

تعتبر آلية توليد الكتلة والشحنة واحدة من المشكلات التي تواجه نظريات المجال. فتوليد الكتلة لا يمكن عمله عن طريق آليات هيغز وفق النسبية الخاصة المعممة ولإعتماد الكتل على متغيرات المجال وهذه تحتاج الي تعديلات على دالة التحويلات لتوليد الكتلة جرت عدة محاولات لحل مشكلة توليد الشحنة والكتلة. في هذا العمل تم اقتراح دالة لاجرانج جديدة من الرتبة الثانية وقد اعطت معادلات ماكسويل الاعتيادية بجانب الهاملتوني الاعتيادي مع جزء اضافي يمثل المجال المتولد او الممتص عن طريق الجسيمات المشحونة بجانب الجزء الاعتيادي الذي يمثل طاقة المجمة في الشحنات. استخدم الهاملتوني في فراغ حر تحديدي بفعل المجال الكهربائي لإيجاد تعبير للشحنة المكمة التي تحوي عدداً كميان يمكن ضبطهما بحرية للتنبؤ بشحنات كل الجسيمات الاولية . وتم الحصول ايضا على صيغ شحنة تكميمية متشابهة بإستخدام الطاقة الذاتية للكتلة ونموذج الوتر التذبذبي وحل معادلة كلاين وقوردون للجسيم في صندوق وللوتر.

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