Dedication

To my parents and to my family and my tribe.

To my teachers and to my colleagues and my colleagues.

Candles that burn lights to others

To each of the characters taught me.

I dedicate this modest research wishing of God

Almighty to find acceptance and success.

Acknowledgements

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Abstract

Accelerators are utilized in the determination of the mass of elementary particles and the type of particles resulting from the collision of two or more of elementary parties.

This study is concerned with investigating the effect of different parameters on the determination of the masses of the particles produced by accelerators. The error in the masses of the produced particles is studied within the framework of Einstein generalized special relativity. This study shows that the mass error is affected by the potential and kinetic energy as well as the rest mass energy.

Assuming very large rest mass compared to kinetic and potential energy the calculations made for the error in the mass of the electron shows error of 10^{-6} %, while the error is 10^{-8} % for proton mass. These calculations show that the error in the masses of elementary particles is very small and is less than 1% in general.

ملخص البحث

تستخدم المعجلات في تحديد كتلة الجسيمات الأولية وتحديد نوع الجسيمات الناتجة عن اصطدام اثنين او اكثر من الجسيمات الاوليه.

وتهتم هذه الدراسة في بدراسة اثر المتغيرات المختلفة المؤثره علي كتل الجسيمات التي ينتجها المسرع, ويتم دراسة الخطأ في كتل الجسيمات التي تنتج في إطار نسبية آينشتاين الخاصة المعممه, هذه الدراسة تبين أن الخطأ في كتل الجسيمات يتاثر بطاقه الوضع وطاقه الحركه، وكذلك طاقه الكتله السكونيه.

بافتراض ان الكتله السكونيه كبيره جدا مقارنه بطاقه الوضع وطاقه الحركه, عند اجراء حسابات خطأ لا يذ في كتلة الإلكترون يظهر خطأ في حدود 10^{-6} . % لكتلة البروتون, هذه الحسابات تشير إلى أن الخطأ 10^{-8} في حين أن الخطأ هو

. %في كتل الجسيمات الأولية هي صغيرة جدا وأقل من 1

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