Dedication

This work is dedicated to my parents, my friends, my brothers, my sisters, my colleagues and my teachers.” Remember that there is no impossible, just dream and try hard to make your dream come true”.” In life what .”sometimes seems an end is really a new beginning

Acknowledgement

Before of all, the praise and thanks be to Allah whom to be ascribed all perfection and majesty. The thanks after Allah must be to my virtuous teacher professor. Mubarak Dirar Abd Allah who supervised this research and guide me in patience until the results of this research are obtained .I wish to express my thanks to the Sudan university of science and technology, department of scientific laboratories and .department of physics

My humble thanks to everyone help and encourage me during this work. I also would like to thanks my friends and classmates for any support that make me complete this .research

(Abstract (English

Quantum mechanical laws are mainly concerned with foundation of energy and probability spatial distribution of micro particles. The work in the momentum probability distribution is very rare, because quantum laws in momentum .space are complex

To surpass the difficulty of quantum laws in momentum space, this research starts formulating Schrodinger equation in momentum space. It utilizes this equation to find the momentum probability distribution in momentum space for Harmonic Oscillator. It shows that the infinite momentum is not possible. To check the validity of this equation the spatial operator and the commutation relations were derived. The derived spatial operator in momentum space and the commutation relations are found to be in agreement with that obtained by other standard .methods

(Abstract (Arabic

تهتم قوانين ميكانيكا الكم في الغالب بايجاد الطاقة والتوزيع الإحصائي للجسيمات الدقيقة في فراغ الإحداثيات. وتوجد أعمال ومساهمات نادرة في إيجاد التوزيع الإحصائي للإندفاع وذلك لصعوبة قوانين الكمية في هذا الفراغ.

لتجاوز هذه الصعوبة بدأ هذا البحث بصياغة معادلة شرودينجر في فراغ الإندفاع. وأستخدمت هذه المعادلة لإيجاد التوزيع الإحصائي للإندفاع للمتذبذب التوافقي. و قد بين هذا التوزيع أن الإندفاع اللانهائي غير مسوح به لإختبار صحة النموزج ثم إشتقاق صيغة مؤثر الإحداثيات وعلاقات التبديل. و قد وجد أن صيغة مؤثر الإحداثيات وعلاقات التبديل المشتقة تتفق مع تلك التي تم الحصول عليها بطرق أخرى نموزجية.

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