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Relations of Decay Constant and N/N0 in D Wave Molecule

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Abstract: *- D wave molecule in quantum dynamics is found to have a short (~several hundred ms) life. So that it is calculated that the N/N0 and time at a certain life which is 0.2s, 0.32s and 0.49s. Through comparing we find the life is more important than the time, it is first factor and then passing time. The frequency and energy decrease if D wave increases. D wave molecule in quantum dynamics is found to have a short (~several hundred ms) life. So that it is calculated that the N/N0 and decay constant with half-life period at a certain time. Through comparing we find the half-life period is more important than the decay constant, it is first factor and then decay constant. It is found that N/N0 increases with half-life period increasing and it decreases with life decreasing too.*

Keywords: *- relationship; half-life period; decay constant; life time; D wave molecule: energy*

1 Introduction

In 1946 the first computer was established in USA and then according to Mole principle the computer calculation speed increases one time each eighteen months. Now the quantum computer is established to apply to computing and mobile cell communication. [1~4] Jianwei Pan and Chaoyang Lu have established quantum laboratory to proceed experiment to apply to computer CPU (central processing unit). Here D wave molecule is proposed to have life about several hundred microsecond. D band is frequency scope of about 110~170GHz. That can compute mathematical ability 4 billion times more rapidly. The question is how to delay D wave life to bigger one for application in computer in future. So in this paper it is researched that D wave molecule life and time to invoke the nuclear decay application for exploring on computer D wave. How could the frequency and energy change if D wave changes. How can the life and passing time affect quantity between new and old particles? The aim will be put to explore bigger ability that they produce. That will benefit from the endurance ability in new status which can promote their computing speed and accuracy later. It is done to enhance its utmost ability to solve the key D Wave, S wave and even Q wave ability in computer science currently. For the sake of wielding its bigger capability to current industry it is a kind of pursuit for us. Now the new industrious field meets new and old energy change it is really our time to establish new construction innovation and reformation for fitting to the future challenge in the world. We should hurry up and catch the chance to new computer world that is the most significant matter in twenty-fist century.

For the smoothly transferring to new energy innovation we should put the quantum computer the first position to new order to grasp the future world in advance. China is leading to this innovation in the field of new and high technology one especially in quantum computer. The speed is higher than first one several billion times. One second management amount reaches one hundred years of it within only 80 years. A new high technology computer and communication innovation becomes gradually currently.

2 Discussion

D wave N/N0 decreases when time increases as Figure 1 with the life scope of 0.2~0.78s. The

higher the life is the higher N/N0 is. The higher the one is the higher passing time is. Meanwhile the higher the pass time is the lower N/N0 is. Moreover the low life is steeper the high is more sluggish. If the sluggish one is chosen the life will be longer. On the contrary the long life corresponds with the sluggish one whose curve is controlled by one of more than 0.78s which exists in more than 2 seconds. That will benefit us to maintain more than 5 times time in quantum computation which decreases quantum quantity reducing producing cost largely. So it is determined that the fitter material is to found to require high frequent energy quantum or photon to increase its life. The lower pass time has high N so if we find the lower pass time the high N will be available. New photons will fit it according to this Figure. The photon can decrease gradually here. The new particle can be promoted highest in initial. So we should pay more attention to the new particle. According to this Figure the 1 is best one. So we pay attention to this initial one more times. The data on this can be arranged to find the ones for applying to. The made one can be checked again to use at most. In factory the careful check can be done. Here N is new particle quantity. N0 is particle quantity before one time. N/N0 is the ration of quantity new occurred and quantity before. Because the new D wave particle occurred after a time the N/N0 will decrease more and more. So the original is most when the time is 0.005s that is 2.695 as Figure 2. Then it decreases slowly from the 0.004s to 0.3s with the value from 2.67 to 1.46 at life of 0.49s. It explains the ration in new particle will decrease gradually ie the new particle is decreased here. At 0.34s life the new particle is 1.05 in the end. Moreover at 0.2s life time that is 0.6. It explains the shorter life for example from 0.49 to 0.2s has littler new D wave molecule happens. Meantime they are decreased from a common value of 2.6 and them the difference among them becomes bigger and bigger. They are staying on their constant value as above ones in the end. In the condition of two factors common roles the result is curved here. Through comparing we find the life is more important than the time, it is first factor and then passing time. The question we meet is how to delay gradually the life for increasing. Answer is increasing the natural math, only new equation is erected according to theories and experiments data can we get it. Whether the 2.7 is the highest one needs us to confirm the theoretical base or experimental data in terms of calculation in this study. How to erect the natural logarithm as the functional method is the key confirmed issue. So the correction degree with the equation is main problem for us to confirm. Only it is based on scientific method can we believe the value fundamentally? The wave changes from 1.73 to 2.73mm for D wave about 110~170GHz. The energy changes from 4Mev to 6Mev when above wave is. The energy is for a photons so it need many them to induce. The speed is needed rapidly so that a certain photons will be necessary. For example if one computer power is 200W that needs 8.2E23 photons in about 0.3 second.

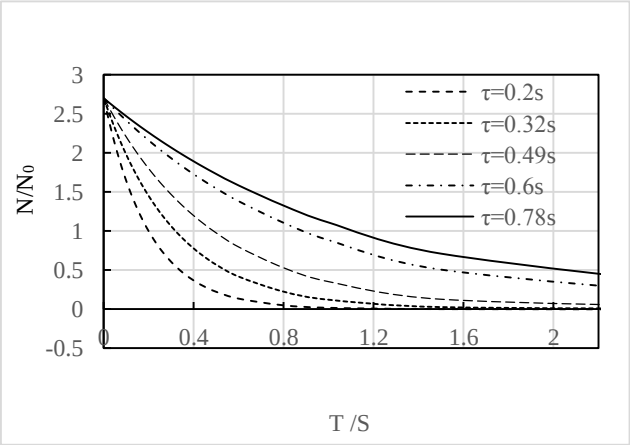

Figure 1 the relationship between N/N_0 and T.

As Figure 2 the new particle will decrease with the decay constant increasing. It expresses that the decay probability per unit time in nucleus. It is from 2.7 to 0.1 times from 0 to 12 in decay constant. The high new particle is maintained no more than several number. As Figure 3 the decay constant decreases if half-life period increases. It is decay probability on a nucleus in a unit time. It is from the $\lambda=0.693/T1/2$ in material carries D wave. The big half-life period results in small decay constant.

Figure 3 censuses the material from 0.06a to 1.5a in half-life period. At 0.7a the feature value decreases steeply into 2 and then it maintains a constant one about 1.0. The ration between new and original particle quantity increases with increasing half-life period. It also increases steeply into 2.6 at 0.6a of half-life period then it maintains a constant one about 2.7~2.8 up to 1.5a. It expresses that the longer half-life period will increase new bigger particle quantity. For the sake of acquiring more new one it is needed to long the half-life period and choose element with longer half-life period. It is benefit to long the T1/2 in applied quantum field such as quantum computer. Only in this way can we decrease the quantum quantity in computation. Moreover in order to gain the big half-life period we should gain the big life with D wave molecule. The life is only X/10 second which confines our capability to proceed quantum computer. On the other hand we should produce large quantum quantity to maintain computing. The equations of (5) and (6) is decay constant formulas.

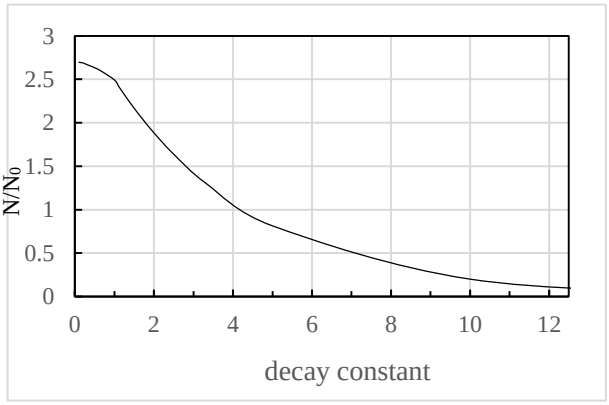

Figure 2 the relationship between N/N0 and λ.

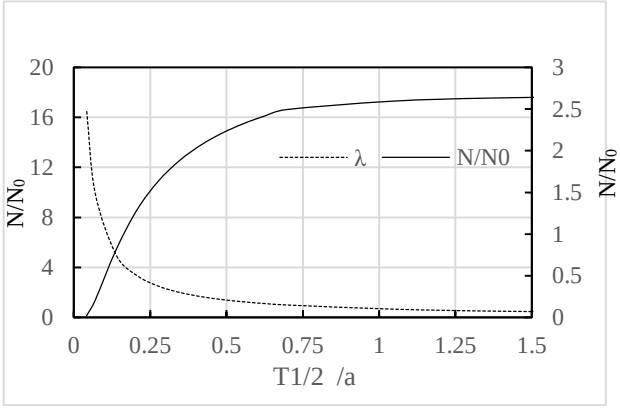

Figure 3 the relationship between N/N_0 and T.

Because $\frac{N_0}{2} = N/2e^{-\lambda t}$ (1)

Has $\frac{N_0}{2} = N_0 e^{-\lambda T_{1/2}}$ (2)

Has too $1 = 2N_0 e^{-\lambda(T_{1/2}+t)}$ (3)

And $N/N_0 = 2e^{-\lambda(T_{1/2}+t)}$ (4)

Take both sides logarithm

$$\lambda = \frac{-LN(N/N_0)}{T_{1/2}+t} \quad (5)$$

This (5) is the relation equation λ between $T_{1/2}$ and N/N_0.

Take （1）logarithm too

$$\lambda = \frac{-LN(N/N_0)}{t} \quad （6）$$

This (6) is the relation equation λ between N/N_0.

As Figure 4 The energy Mev decrease if D wave increases. It is from the E=hν both ones will decrease according to increasing D wave. The big frequency that is 11 exponent /s results in big energy while energy one that is 4.5Mev~7Mev. Figure 1 censuses the D wave status.

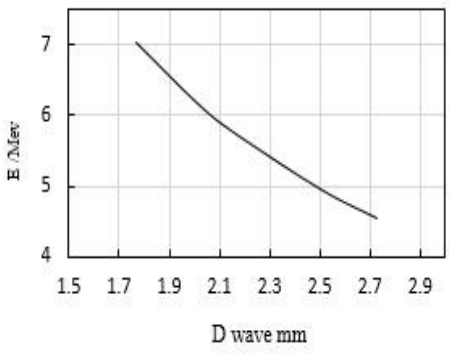

Figure 4 the relationship between energy Mev and D wave.

3 Conclusions

1. The first factor is life then is time to affect new D wave photons according to life 0.2s、0.34s and 0.49s. Both of them will affect the N/N0 certainly and it will decrease to 0.6、1 and 1.5 with increasing time and decreasing life accordingly. The half-life period decreases too with decreasing life and time.
2. The new particle will decrease with the half-life period increasing. It is from 2.7 to 0.1 times from 0 to 12a in T1/2. The high new particle is maintained no more than several year. The first factor is half-life period then is decay constant to affect new D wave photons. Both of them will affect the N/N0 certainly and it will decrease to 3 and then 1 with increasing half-life period accordingly. The new particle increases to 2.5 at 0.6a with increasing half-life period.

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