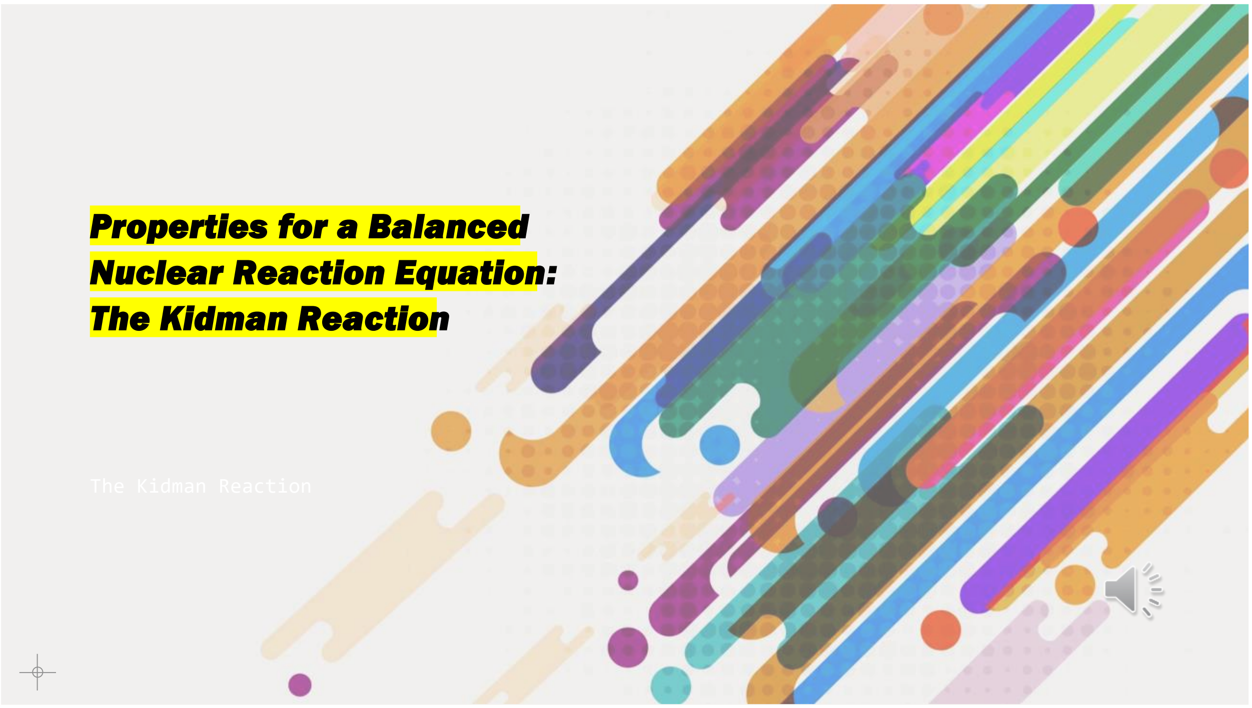
By Gene Kidman

Rev 1: March 11, 2024

Properties for a Balanced Nuclear Reaction Equation: The Kidman Reaction



Hello.   I am Doctor Gene K and this presentation is Properties for a Balanced Nuclear Reaction Equation: The Kidman Reaction. This presentation describes a nuclear reaction equation which I discovery several years ago. I consider this balance nuclear reaction equation to be a fact because it is derived from measurement. If you are like me, you want the hope of fusion without the expense of a Tokamak or without the potential of a nuclear bomb. That hope needs to be based on facts. Because if we can focus on facts, we have a greater chance of not spending our time on useless theories. If we start right, it is easier to keep discovering facts and making progress toward realizing our hope. I hope to share some of the frustration and hope for this discovery.

$$O_2 + 7\ D_2 = 2N_2 + 2H_2$$

	$O_2 + 7\ D_2 =$	$2N_2 + 2H_2$
Total Nucleons	60	60
Protons	30	32
Neutrons	30	28

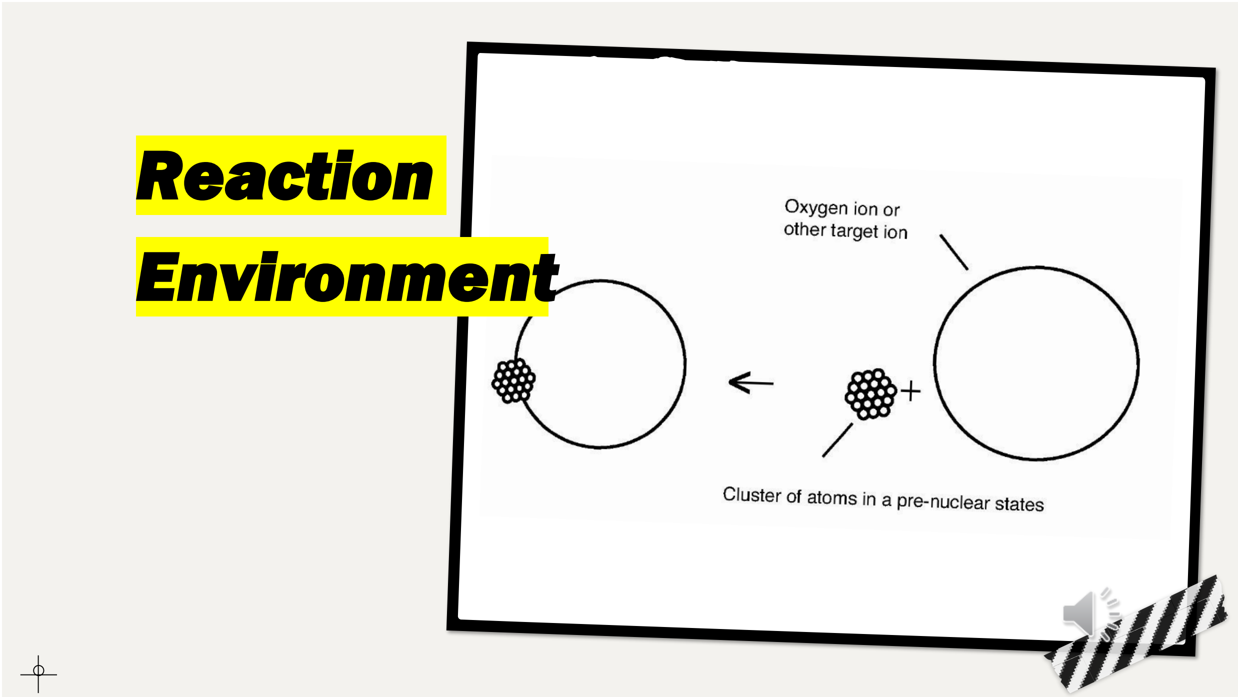
Overall Reaction

What is the Kidman reaction and why should you care? This is the Kidman reaction. It may have the potential to provide all the energy the world will need for a very very long time. This is a real reaction. It can be derived from measurement. One compares the chemical composition within a reactor before the reaction to after the reaction by mass balance and stoichiometry. The main purpose of this presentation is to show that there is no deception here. To get this answer required only careful assumptions and math. But before we get to mass balance and stoichiometry, let's criticize the reaction.

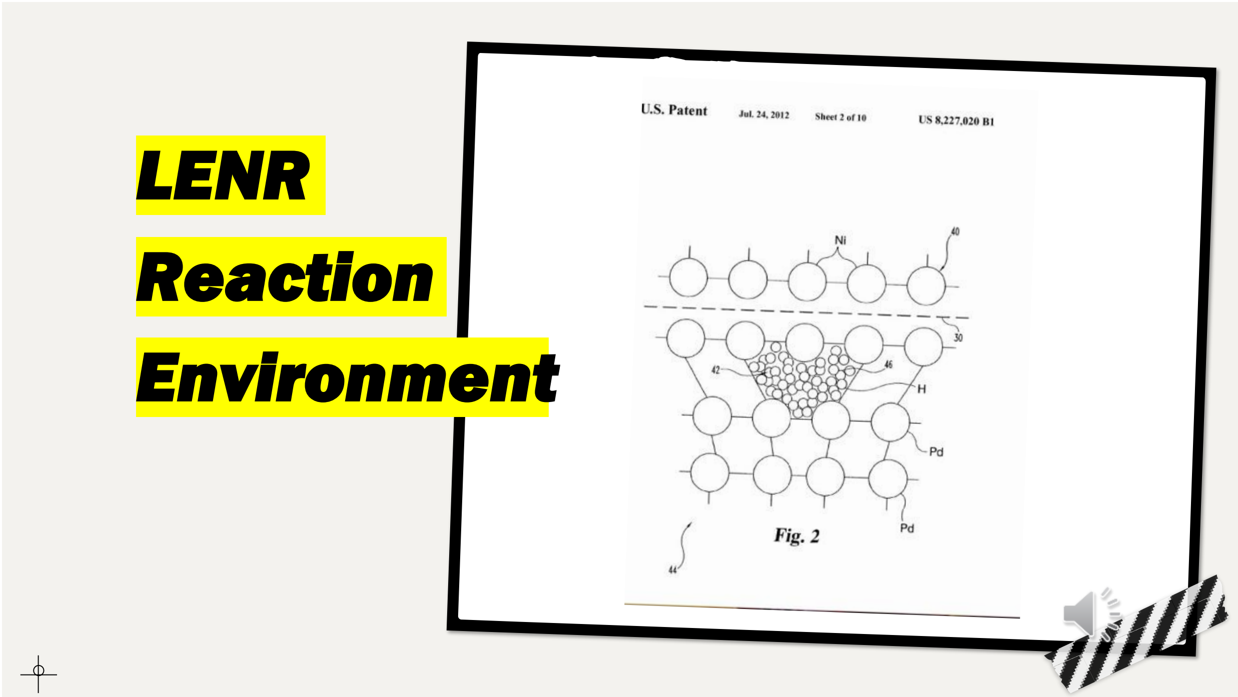
On the positive side it is a balanced reaction, meaning, if we look at the total number of nucleons on the right of equal sign, it matches the total number of nucleons on the left of the sign. Let me break that down. A nucleon is a proton or neutron. So, 30 plus 30 equals 60 and sum of neutrons and protons on the other side is also 60. So how do you get 60 total on the left? Well, Oxygen has an atomic number of 16, meaning 16 nucleons. And deuterium is heavy hydrogen. It has a neutron and a proton, so its atomic number is 2. Then do the math; 2 x 16 + 7 x 2 x 2 =60 The math on the other side is 2 x 2 x 14 for the nitrogen plus 2 x 2 x 1 for the hydrogen which equals 60.

If you look at the protons and neutrons, you find that nucleons are conserved; meaning, we have the same number of total nucleons on both sides of the equation. Comparing before to after reaction one finds that two neutrons became protons.

Now let's consider negative criticism by way of questions and answers. How does this reaction work? Since, one would have to get an oxygen atom together with 7 deuterium atoms and do it all at the same time. That is highly unlikely. Further, there is a coulomb barrier. So, one expects that during a collision. the barrier would cause the oxygen and hydrogen to bounce off each other.



The answers are all in the reaction environment. But the answers require you to break unnecessary conventions. For example, this reaction is written left to right rather than right to left. It’s not the usual convention but the convention is not necessary. The oxygen atom or its ion is the target, and the deuterium are all in a cluster, so when the projectile collides with the target, all the atoms get together at same time. But the reaction does not have to happen all at once. Rather it can be a sequence of reactions which happens while the oxygen is attached to the cluster. That is why in the previous slide, the reaction is listed as an overall reaction. So, I answered the collision question and generated a new one. What is this cluster that must overcome the coulomb barrier?



What does this slide have in common with the prior slide? It is a cluster reaction that claims to overcome the coulomb barrier and cause nuclear fusion. The term LENR is for low energy nuclear reaction. This figure is from a patent by George Miley. This figure is based on Miley paper entitled “Condensed Matter “Cluster” Reactions in LENRs”. Squid magnetic measurements were made of cluster regions. Their hydrogen densities approach 10^{24} nucleons per cc. These clusters are the catalyst for fusion.

You notice in this figure that the lattice has an imperfect alignment where the cluster forms. That imperfection is called a dislocation site in Miley’s patent. The more dislocation sites the greater the amount of LENR.

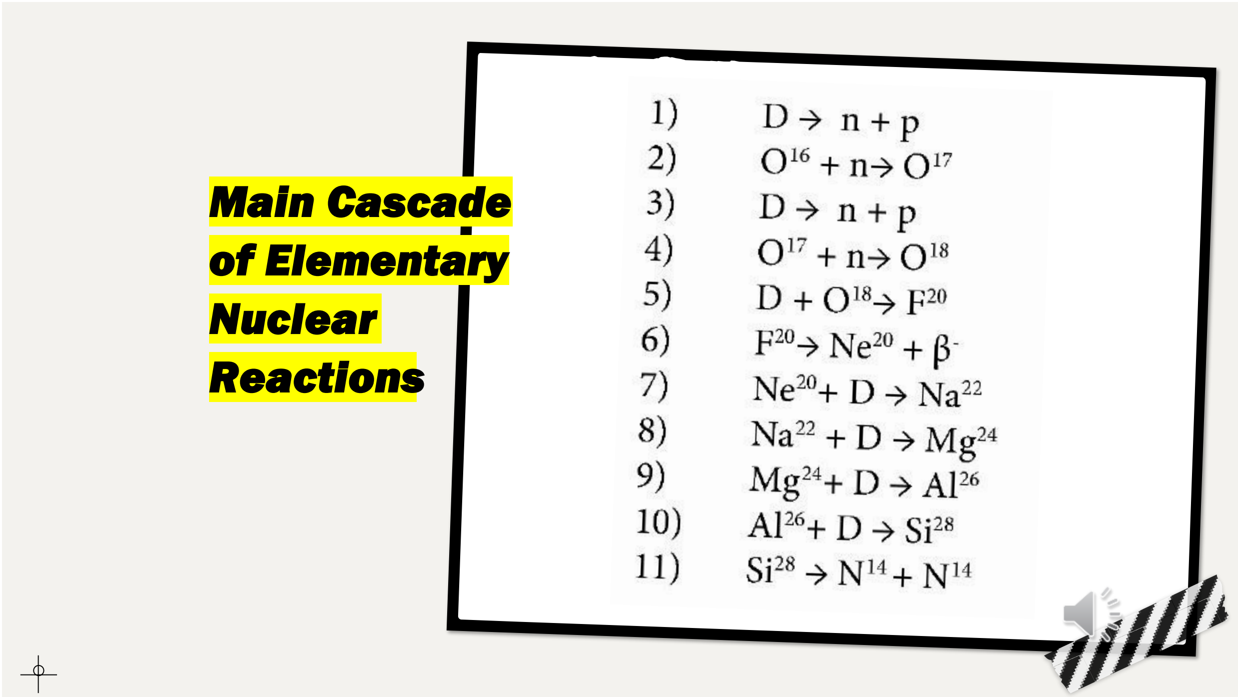
The dislocation causes the cluster. But a dislocation in a metal lattice isn’t necessary for nuclear reaction. Rather the premise for Kidman reaction is that the cluster can form in an electric arc. We have a new question: What causes the cluster to form? We note that but put it aside for later presentations.

Miley’s patent is just a sidestep providing confidence for the important question which is “How does this cluster overcome the coulomb barrier? We will get to that answer, but we need evidence to point the way. To get that answer we must focus on one specific reaction, the Kidman reaction. You need to have confidence that the reaction is correct, and you need to see what assumptions when into the data that derived the result. Those assumptions will lead to the answer.

	$O_2 + 7\ D_2 =$	$2N_2 + 2H_2$
Total Nucleons	60	60
Protons	30	32
Neutrons	30	28

Overall Reaction

So here is the reaction again. The hydrogen is in a cluster and the target oxygen collides with the cluster, then the reaction happens. But if it happens in steps, can one confirm a sequence of reactions that sums to this overall reaction? Yes, I can. I'll identify the parts of the reaction on this slide and in the next. We will go back and forth between this slide and the next one for the various parts. You notice that one can divide the equation by two. So, the reaction can be based on one oxygen atom.



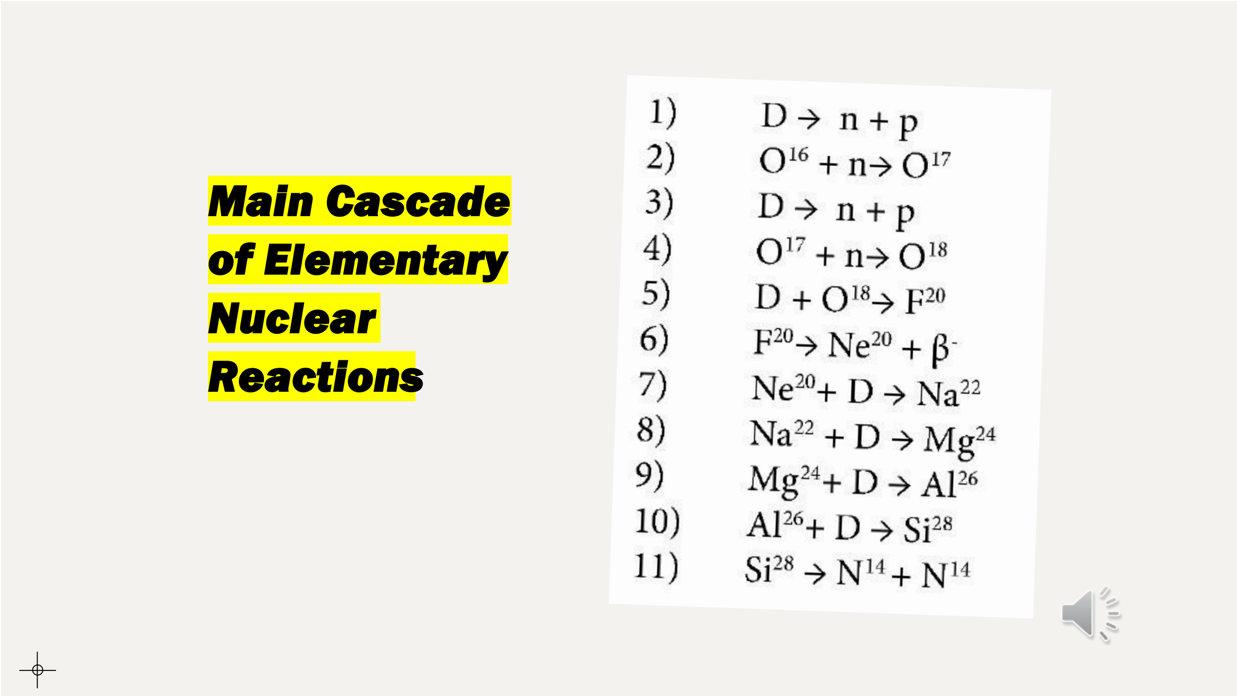
The reaction starts on the surface of cluster. The cluster photolyzes deuterium to produce a neutron and a proton. The neutron is absorbed by the oxygen which is absorbed on the cluster. So, part of the answer to the coulomb barrier question is that there is no coulomb barrier for a oxygen to absorb a neutron. That raises a new question: how does the cluster get the energy to photolysis deuterium? We will hold that question and focus on the rest of the reactions.

One has accounted for the input of oxygen and an output of hydrogen. Photolysis in lines 1 and 3 produces two hydrogens, which accounts for all the output hydrogen. The oxygen starts at isotope 16 and goes to isotope 18. Now, we'll jump back to the last slide.

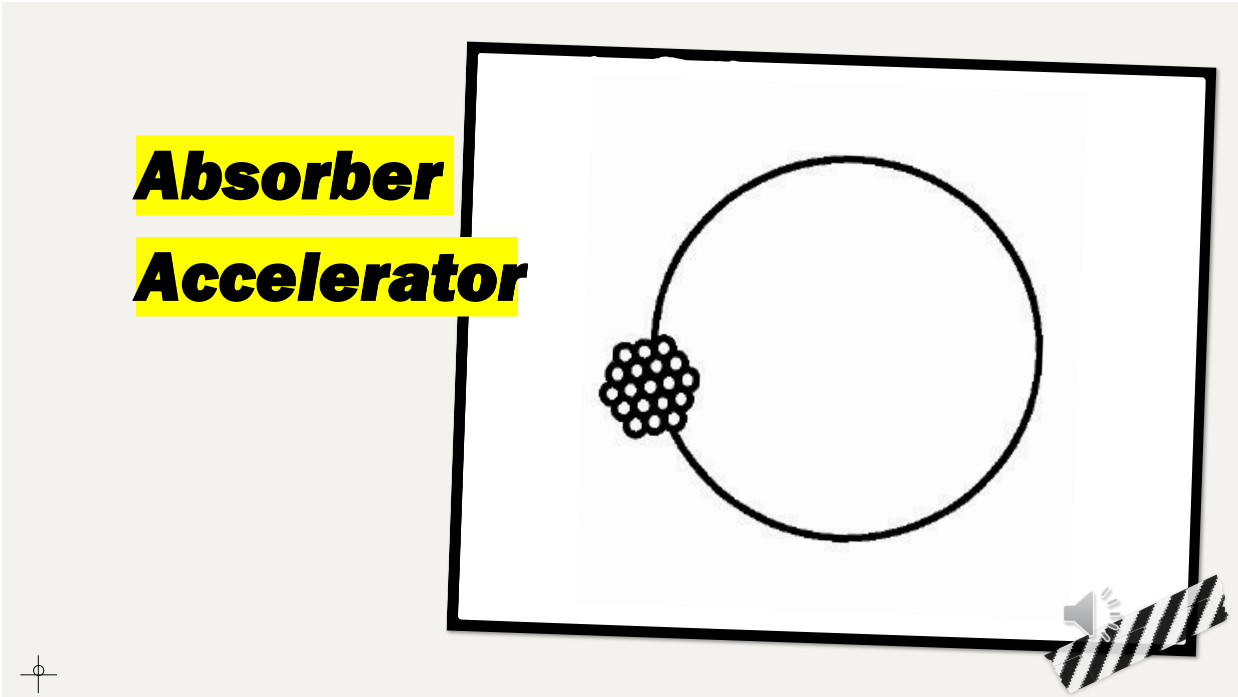
	$O_2 + 7\ D_2 =$	$2N_2 + 2H_2$
Total Nucleons	60	60
Protons	30	32
Neutrons	30	28

Overall Reaction

See that the other input was 7 atoms of deuterium, and the other output was 2 atoms of nitrogen. Now, we’ll jump forward.

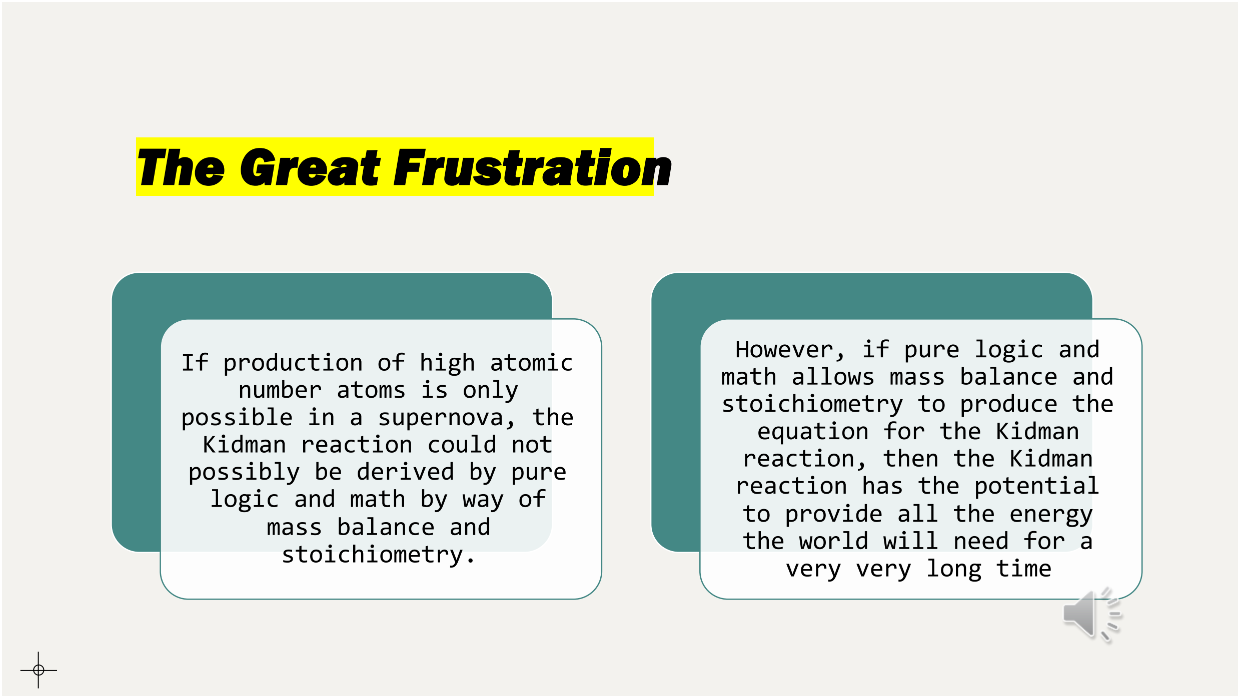


So, we are back. Here there are 7 deuterium steps. Further, the last step is a fission step that produces nitrogen. So, the first step that absorbs deuterium produces fluorine. That raise the question: How does the cluster get energy sufficient for that fusion step? Well, notice getting the energy for photolysis is like getting the energy for fusion, so we hold that question and focus instead on having consistent math through the steps. Florine 20 is radioactive, so it decays to Ne20. Another deuterium absorption gets to Na22, another deuterium absorption gets to Mg24, another deuterium absorption gets to Al26 and finally, the seven deuterium results in Si28. So, the math in this set of reactions is correct. Now, let’s answer the energy questions.



So, the presumptive answer to the energy questions is that the cluster acts as a near perfect absorber of energy and provides a way for deuterium and neutrons to pass the coulomb barrier of a target atom. The energy absorbed from fusion provides energy for fusion and it also excites Si28 sufficiently for fission.

The presumptive answer is totally out of line with current physics because it requires the cluster to act as if it were a star about to go supernova. Notice that the energy question is the same one from the beginning of this presentation. Why doesn't the energetics look like a tokamak? Presumptively because containment is like that for a star about to go supernova. So, the physics is not that of a tokamak.



So here is the great frustration. If production of high atomic number atoms is only possible in a supernova, the Kidman reaction could not possibly be derived by pure logic and math by way of mass balance and stoichiometry. However, if pure logic and math allows mass balance and stoichiometry to produce the equation for the Kidman reaction, then the Kidman reaction has the potential to provide all the energy the world will need for a very very long time.

Can you follow the presumptive answer toward the hope of limitless energy or are you prevented in doing so by a need for unnecessary conventions?