Disintegration of Uranium 235

Eufstratios Lafcharis

Abstract: ***This is an in - depth analysis of the disintegration reaction of Uranium 235, in order to verify any links with the "SLA" configuration of electron orbitals. The results portray a surprisingly accurate depiction of a range of fission products of Uranium 235, in which there are four complementary fission products. This seems to imply that there is a very strong likelihood that nuclear structures abide by similar traits to the "SLA" interpretation of parallel aligned atomic orbitals.***

Please Note:
This is a continuation of a prior "SLA" Atomic Structure research article that was published in the International Journal of Science and Research. For the benefit of readers that are unfamiliar with the original research document. I have decided to include a concise narrative of the basic structural configuration within an "SLA" atomic structure [Otherwise, please refer to the original publication].

"SLA" Orbital Configuration

This is where everything that has been covered till now comes to fruition, and makes the structure of an atom come to life, as nature intended.

The centrifugal force of rotation ensures that "s" orbital electrons always occupy the central Alpha Dimitrios Ring, because they are the first electrons within a newly established shell. Just as projectiles always follow a path of the largest circumference around the Earth, in a plane that divides the planet in half, so do electrons always follow the path of the largest circumference within each empty shell. As more and more electrons converge and endeavour to co - exist within a common shell, a cluster develops enabling electrons to queue inline and/or occupy each of the outlying flanks, before finally ascending and climbing into a multi - tiered formation; based upon a delicate combination of both Coriolis and Coulomb influences. Incoming electrons are faced with a complex three - dimensional radial electromagnetic intensity gradient with varying levels of resistance, both radially and laterally.

If there is available capacity, incoming "p" energy orbitals extend a layer by either following in behind to share the same Dimitrios Ring, or spread to adjacent flanks in order to establish new smaller circumference Dimitrios Ring orbital pathways, on either side of the central Alpha DiR (fig 061).

Each additional energy subshell that settles within a given shell exceeds the previous energy subshell by two orbitals on either of the two flanks. There is some uncertainty as to which of the available options of a particular energy subshell are occupied first. However forthcoming advanced "SLA" research in the final chapters of this research manuscript, disclose symmetry as being exceedingly significant to the stability of an atomic structure; with an eventual conclusion that electrons possess flexibility to switch between adjacent DiRs, in order to attain perfect symmetry within each shell. This implies that the first "p" energy electron occupies the central Alpha DiR, in line with the "s" orbital electron. However, a second incoming "p" energy electron brings about a reshuffle, in which two "p" energy electrons suddenly switch to mirror image positions on opposing flanks of the two hemispheres. In other words; they establish perfect symmetry on either side of the central Alpha DiR.

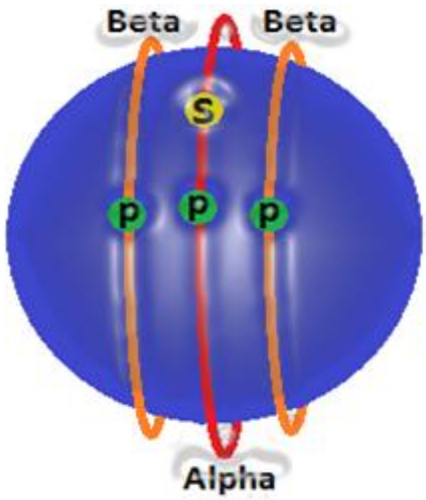


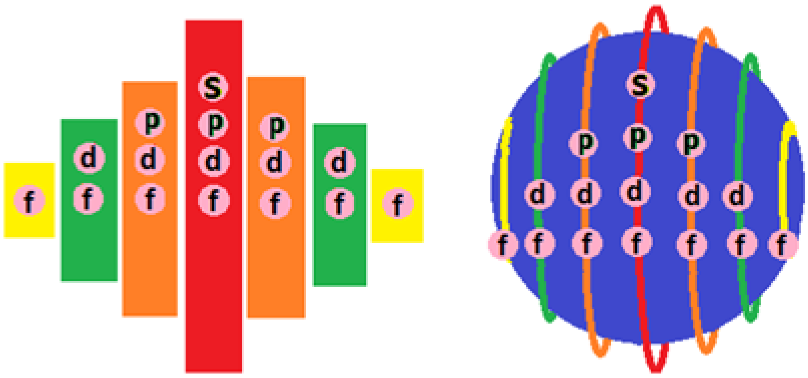
Figure 061: Portrayal of the relative positions of both "s" & "p" orbitals within three DiRs

The transitioning of atomic orbitals between central and outlying flanks becomes increasingly apparent within large energy subshells; as verified by pending information in the final chapters of this book. It basically implies that symmetry plays an extremely prominent role in bringing stability to an atomic structure! So much so, that positions of orbitals within energy subshells are generally determined by whether there are odd or even numbers of orbitals, and in particular instances, multiple configurations can co - exist as isotopes of the same element (information pending).

The presence of two extra orbitals within successive energy subshells that share a common shell; is a means by which quantised units of charge (electrons) conform to a uniform intensity within a spherical surface area (shell) (fig 062). In other words, the nature of DiRs is such that the numbers of orbitals correspond to the length of individual DiRs; so there are progressively fewer orbitals as DiRs become smaller on either of the two flanks (portrayed as a triangular formation) [fig 065].

There are always odd numbers of Dimitrios Rings within each shell; the reason being that the first Alpha Dimitrios Ring can only ever occupy a central position within the largest circumference; so for symmetry to be upheld, additional orbitals must be evenly balanced on either of the two outlying flanks.

A shell contains a parallel array of Dimitrios Rings, ranging in dimensions from the largest Alpha, through to Beta, Gamma, Delta, etc; which are progressively smaller in circumference (fig 065). Apart from the central Alpha Dimitrios Ring, all other Dimitrios Ring orbital pathways come in identical pairs, with equivalent energies and circumferences on either side of the central Alpha DiR.



Dimitrios Rings: Delta Gama Beta Alpha Beta Gama Delta Delta Gama Beta Alpha Beta Gama Delta
Figure 065: Two depictions of the fourth shell, consisting of seven Dimitrios Rings.

The "SLA" Atomic Configuration has now been finalised. It becomes apparent that each electron has its own unique set of coordinates within an Atomic Configuration; which relate to a shell, an energy subshell, a specific position (Dimitrios Ring) within an energy subshell, and a spin of an electron, depicting the relative position within an orbital cycle. These co - ordinates identify an exact location of an electron within an Atomic Structure; thereby defining the so - called, four quantum numbers of Conservative Science. Based on these "SLA" principles; each shell can be portrayed independently as separate consecutive layers or shells. So the configuration of Uranium 235 can be portrayed in the following format (refer to Fig 066)

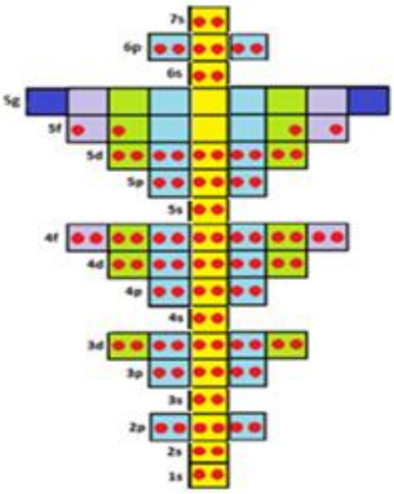


Figure 066:

Disintegration of $^{235}U_{92}$

Given the unique and extremely accurate depictions of electron structural configurations; it is reasonable to investigate whether any applications of "SLA" Concepts are relevant within the inner sanctum of an atomic nucleus. This research into nuclear structure encompasses the disintegration of Uranium 235.

The Atomic Nucleus is a mystifying region in the centre of an atom, with little to go by in terms of scientific understanding. However, within the enviable task of investigating inner functions of atomic nuclei, the aim is simply to investigate plausible associations to "SLA" Concepts that may provide greater transparency.

From the outset, there is an impediment with current perceptions of atomic nuclei, because the atomic nucleus is generally perceived as being somewhat solid and unyielding; whereas atomic electromagnetospheres have been shown to be exceedingly fluid with a high degree of penetrability, resembling the gaseous properties of an Earth - like atmosphere. However, rigidity was a property originally associated with electron configurations, just prior to the onset of "SLA" Theoretical reasoning; and that has been comprehensively dispelled by this current "SLA" research!

There are many possible arrangements of nucleons within an atomic nucleus. For instance; it could entail a rigid lattice structure where protons and neutrons interlink in a similar manner to ionic substances such as NaCl. If this were to be the case; then fission product graphs representing the disintegration of Uranium 235, would be expected to take on an inverted parabola shape (fig 581); representing fewer fission products, as the nucleus becomes progressively harder to split along divisions nearing the largest diameter; if indeed the nucleus is spherical (fig 582).

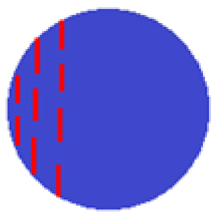


Figure 581: A graph of expected fission product yields based on a spherical nucleus with uniform structural consistency

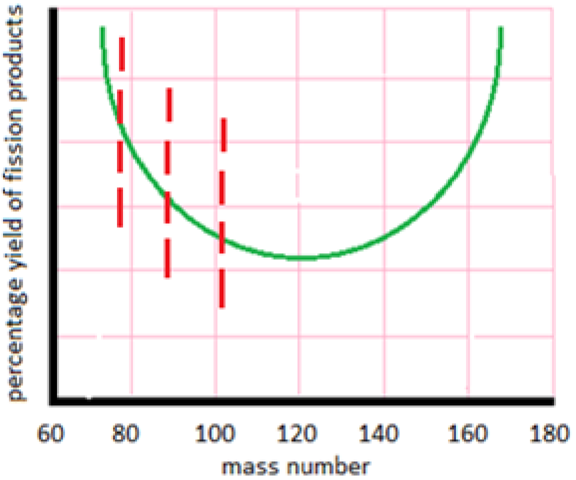


Figure 582: {Red linear divisions of a rigid blue coloured nucleus}

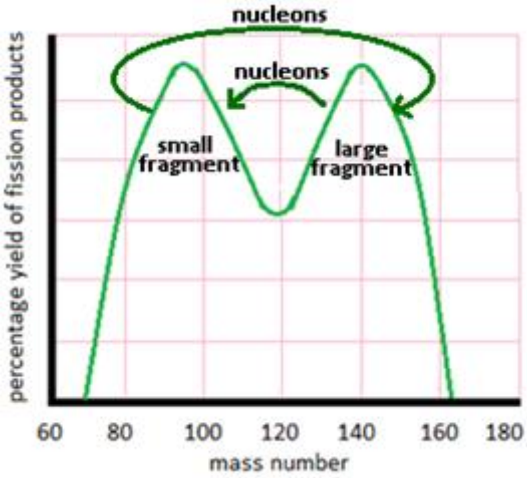


Figure 583: Percentage yield of fission products from"Slow Neutron" fission of $^{235}\mathbf{U}_{92}$

Fragmentation of Uranium 235 is shown to break apart into very specific fragments with precise ratios and defining trends (fig 583); thereby making it very unlikely for spherical atomic nuclei to have uniform structural compositions. This is a very significant revelation; for it provides unique insights into nuclear structure that coincide very favourably with properties of "SLA" Concepts.

The disintegration of $^{235}U_{92}$ into distinct size fragments; is indicative of an atomic nucleus that does not have a uniform structural framework, but rather possesses inherent weaknesses along which fragmentations take place. These fragments run deep within the structure because fragments are extraordinarily large; but rarely extend through the centre of an atom.

In accordance with "SLA" Concepts; inherent weaknesses exist between individual Dimitrios Ring orbital pathways. This presumption is based on defined properties associated with swirling electromagnetic fields, which are characterised as energy - efficient electromagnetic slipstreams that restrict electrons to very specific orbital pathways. These atomic dimension electric currents of circulating charge, exist as tangible entities in their own right (electromagnetic slipstream); and it is the stability of their circulatory activity that induces disassociation along linear columns of orbiting protons (Dimitrios Ring orbital pathways).

Fragmentation occurs along specific divisions for both "Slow Neutron" and "Thermal Neutron" fission of $^{235}U_{92}$. However the divisions seem to reveal a level of symmetry about them; based on fission product graphs (fig 583 & 587), which display two equidistant upright parabolas on either side of the half mass of Uranium 235.

Such symmetry implies that apparent divisions are complementary, in that they are derived from a single mould, or in some way associated to that mould. The fact that disintegration of Uranium 235 incorporates large fragments is very significant; in
that it represents a cataclysmic annihilation of the atomic nucleus. In other words, these are not superficial alterations that may in any way be associated with the peeling away of individual shells, or chipping away small fragments or individual protons. Instead; these disintegrations are comprehensive, incorporating extraordinary large subdivisions with very specific ratios, which hardly ever incorporate splitting atoms in equal halves.

There are two very distinct features of an "SLA" structural configuration that correspond favourably to the disintegration of Uranium 235. First and foremost; is the defined characteristic of odd numbers of parallel Dimitrios Ring orbital pathways, positioning the largest Alpha Dimitrios Ring at the precise centre of an atomic structure! The acclaimed stability of Dimitrios Ring orbital pathways potentially eliminates any prospect of fragmentation into equal divisions; given that the central DiR represents the strongest component of a nuclear structure. This is consistent with Uranium 235 rarely fragmenting into equal - sized divisions.

The second compatible feature, associating "SLA" Structural Configurations to the disintegration of $^{235}U_{92}$; is that the main divisions between Alpha and Beta DiRs are within reasonable approximations of primary fission product fragments. In other words; fission products typically have nucleon ratios of about 3: 2. This ratio may at first seem at odds with dissociation between the two main DiRs (fig 584 & 585), which has a ratio of approximately 2: 1. However; there are very specific properties associated with atomic orbitals that need to be taken into consideration. For instance; unpaired protons do not strictly adhere to specific DiR's, so they are potentially free to move between fragmenting subdivisions; particularly in the direction of the smaller fragment. Another significant property is in the exceptional fluidity of nucleons within a nuclear structure, thereby enabling protons and neutrons to transition between subdivisions, in accordance to prevailing conditions.

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After much consideration, there is one option that stands out in terms of an accurate portrayal, and which corresponds favourably to the disintegration of $^{235}U_{92}$. It is based on fluid properties of nuclear orbitals, and the distinct possibility that atomic disassociations cause a spill of orbitals between fragments, (fig 585) across a partition that separates the two main divisions. It is a concept that readily accounts for observed discrepancies between fission product ratios.

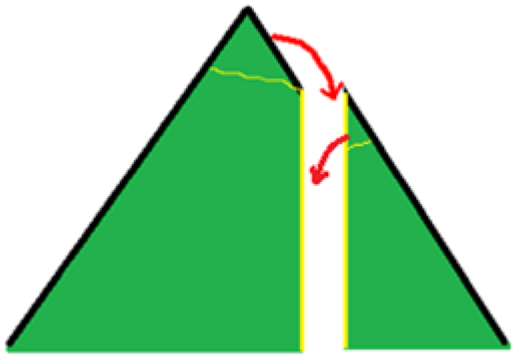
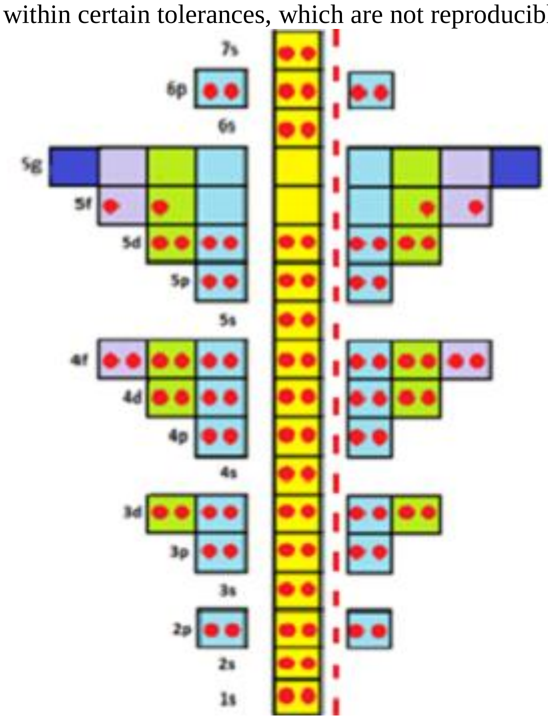


Figure 585: Depiction of a pyramid shaped structure fragmenting showing apex protons primarily transitioning to smaller fragments; but with transitions going in both directions

This assumption of fluid properties with an associated spill of orbitals between fragments (fig 585), across a; partition that separates the two main divisions, may at first seem unfounded; however "SLA" Concepts portray atomic electromagnetosphere's as being exceedingly fluid, with natural inclinations that induce flawless symmetry within the parameters of a radial electromagnetic intensity gradient. Nuclear structures are no different! Fluidity and symmetry are universal properties that are equally relevant to all elementary constituents of an atom, be they protons, neutrons, or electrons. This implies that when atoms break apart, for whatever reason; individual divisions retain the same structural propensities, and are thereby inclined to re - establish independent compound structures, founded upon the same principles of structural integrity.

The two primary divisions of an "SLA" structural configuration exist on either side of an Alpha DiR (fig 586). However, fragments, based on divisions between Alpha and Beta DiRs equate to an atomic number differential of 62: 30 (fig 586), which has an approximate ratio of 2: 1; whereas the highest yields on a $^{235}\mathbf{U}_{92}$ percentage yield fission product graph, show a ratio of 3: 2; based on mass numbers of the two discernible peaks in the $^{235}U_{92}$ slow neutron, percentage yield fission product graph (fig587).

Detachment along one side of an Alpha DiR (fig 586), induces a natural flow of orbitals in both directions; but more so from higher elevations (large fragment) to the lower elevations (small fragment); thereby resulting in a net relocation of protons and neutrons in the direction of the smaller of the two fragments (information pending). This is what brings fragment sizes toward the desired 3: 2 ratio. The presences of four complementary fragments (based on fission graph 587) are the consequence of protons and neutrons transitioning in both directions, while fragmentations are taking place (information pending). In other words; transitions going in both directions are uncontrolled variables that are too random for them to be consistent, or reproducible. It is comparable to dividing a bucket of water in two, and expecting the numbers of atoms in each division to be consistently reproducible. This is not possible, for reasons that there are too many uncontrolled variables. It is for the same reason that the disintegration of Uranium 235 has so many fission products. Fragments fall within certain tolerances, which are not reproducible.



Epsilon Delta Gama Beta Alpha Beta Gama Delta Epsilon
{ 30 } {32} { 30 }
Fig 586: Red line marks division between fragments of $^{235}\mathbf{U}_{92}$

[Fragment ratios in fig 586 are portrayed in terms of numbers of protons, which are likely to possess equivalent mass number ratios; based on comparable distributions of neutrons]

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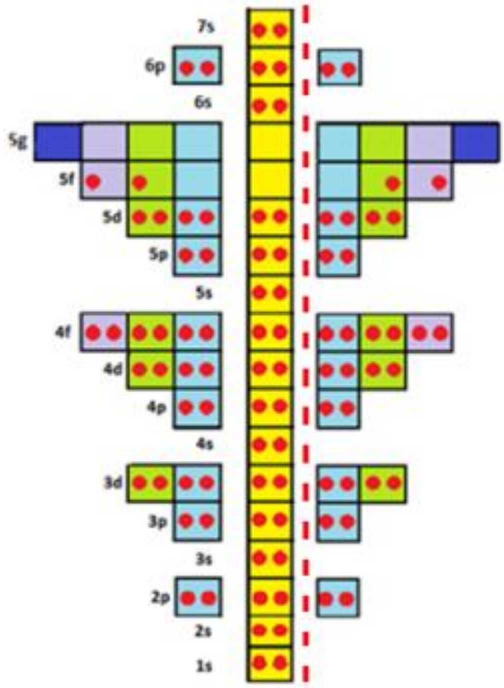


psilonDeltaGamaBeta Alpha BetaGamaDeltaEpsilon
{ 30 } {32} { 30 }

Figure 586: Red line marks (proton) division between fragments of $^{235}\mathbf{U}_{92}$

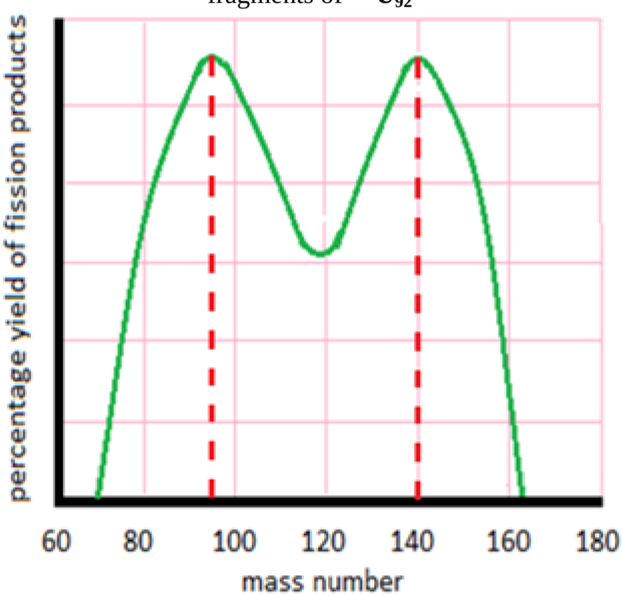


Figure 587: Two main fission products from "Slow Neutron" fission of $^{235}\mathbf{U}_{92}$

The existence of four fission products has now been comprehensively validated, based on logical scientific reasoning. What remains is to identify specific processes that can justify a divergent range of percentage yield fission product graphs (fig 587 & 589). There is one physical attribution that has special relevance in any fragmentations of atomic nuclei. Fluidity possesses natural inclinations for unrestrained particles to transition from regions of high elevations or concentrations, to regions of low elevations or concentrations; which is essentially depicting the properties of an expanding gas, or fluids flowing down a sloping gradient.

The implications are that unequal divisions develop different propensities of re - equalisation as separation is taking place. Previous references to Atomic Electromagnetosphere's have been characterised as fluid oceans of electromagnetism, with the capacity to respond instantaneously to very slight regional disparities; particularly as fragmentations are taking place. Consequently, each division is endeavouring to re - assemble its own structural configuration, quite independent of the other. So in the process of fragmentation; there is a predicted natural tendency for a net transition of orbitals from large fragments to small fragments, based on the physical disparity between fragments (fig 588). In other words; compound structures develop their own regional re - equalisation tendencies, which are proportional to the relative numbers of nucleons, or physical disparity between two divisions. It is much like a pressure differential between two gasses, positioned side to side!

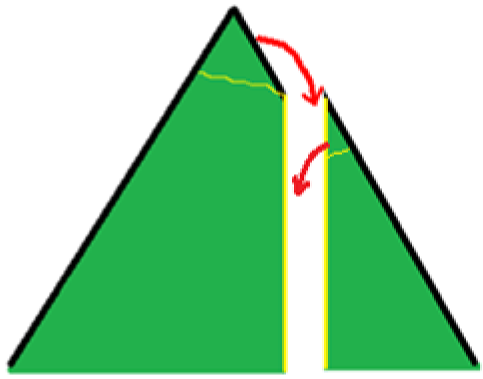


Figure 588: Disparity between fragment sizes

Each may potentially make inroads into the others domain, but with a net flow in the direction of lesser of the two intensities. The border parameter between two fragments is comparable to a separation boundary between two gasses! Fragmentation causes a natural displacement of constituent particles from regions of high intensity to regions of lower intensity, but with plausible transfers going in both directions. Since the physical dimensions of fragments are not equal; then competing forces are also not equal.

This depiction substantiates the presence of two primary fission product peaks with complementary gradients on either side, as nucleons transition in both directions (fig 589) during fragmentation (information pending). The contours of the slopes reveal slight, but very distinct variations between gradients of internal slopes as compared to external - facing slopes that need to be accounted for. For instance; it is notable that internal - facing slopes, associated with thermal neutron fission graph (fig 589), exhibit abrupt linear gradients with corresponding decreases in percentage yields; whereas initial stages of external - facing slopes are slightly concave, representing graduating rates of decreasing yields, pertaining to exchanges from small to large fragments [information pending].

It becomes apparent that the "SLA" interpretation of the disintegration of Uranium 235 is in perfect agreement with distinct outlines of percentage yield fission product graphs. The same "SLA" Concepts that so accurately depict the entire range of properties associated with atomic structure;

are shown to apply equally well, to the domain of an internal nuclear structure.

There are many variations of Uranium 235 fission product graphs that are not symmetrical! However; apart from (single hump) exceedingly high energy fission product graphs; all maintain a general association with two peaks on either side of an inverted parabola. I am uncertain about experimental conditions which induce such diverse ranges of percentage yield fission product graphs. However, given the distinct nature of fission reactions; it is conceivable that general "SLA" concepts can potentially apply in one form or another, to describe each of the varied percentage yield fission product graphs. The "SLA" theoretical model of atomic structure provides a very credible resolution to a puzzling disintegration process that generates four complementary fission products. It is an inference that matches perfectly with $^{235}U_{92}$ fission product graphs, and is consistent with the following "SLA" Theoretical Hypothesis, relating to the disintegration of $^{235}U_{92}$; which actually pre - empted this current supposition; thereby representing the final entry made on Wednesday 27th March 2019. This research paper is now complete. The final piece of the puzzle, relating to the presence of four complementary fragments has been resolved, in a manner that is consistent with the disintegration of $^{235}U_{92}$.

DISINTEGRATION OF $^{235}U_{92}$

"SLA" HYPOTHESIS

"SLA" Atomic Orbital Configurations are based on a compound support structure, where one level support's the next within what is an interdependent co - existence. This means that in the event of a division; two resultant subdivisions automatically collapse and reassemble as separate smaller entities, based on the same principles of stability as the initial compound structure (fig 601).

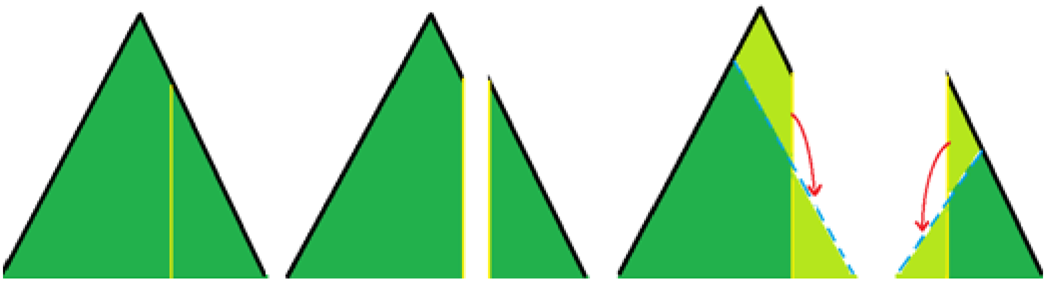


Figure 601

Depiction of fragmentation along a separation boundary between the Alpha and Beta DiR's.
Fragments then reassemble as separate smaller entities

For this exercise, two very specific Uranium 235 percentage fission product graphs have been purposely selected for in - depth analysis (based on "SLA" Principles); due to the high degree of symmetry. Symmetry provides an ideal setting for identifying specific characteristics and traits, which can then assist in extrapolating information for more complex outcomes.

The original intention of this research into nuclear fission was not to provide a complete analytical understanding for all aspects of nuclear fission, but rather to investigate direct links to "SLA" theoretical concepts and reasoning, which may then provide unique insights into nuclear structure.

The first notable feature of these two fission product graphs (fig 602 & 603 on following page); is the near - perfect symmetry that exists on either side of the midway point. They reveal formats that are virtual mirror images on either side of the central median. It becomes apparent that each pair of mirror image gradients, represent two sets of fragments that are within approximations of being complementary; in that one fragment gains nucleons at the expense of the other fragment; and that both are part of the same mould. In other words; one of the fragments gets larger while the complementary fragment gets smaller, so nucleons are simply switching from one fragment to the other, and the two fragments are interconnected.

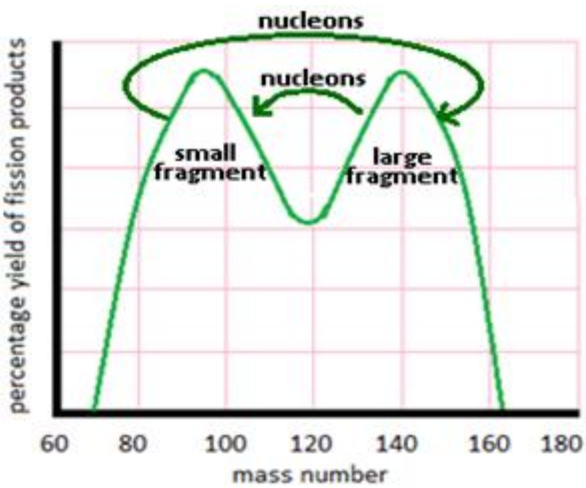


Figure 602: Percentage yield of fission products from "Slow Neutron" fission of $^{235}U_{92}$

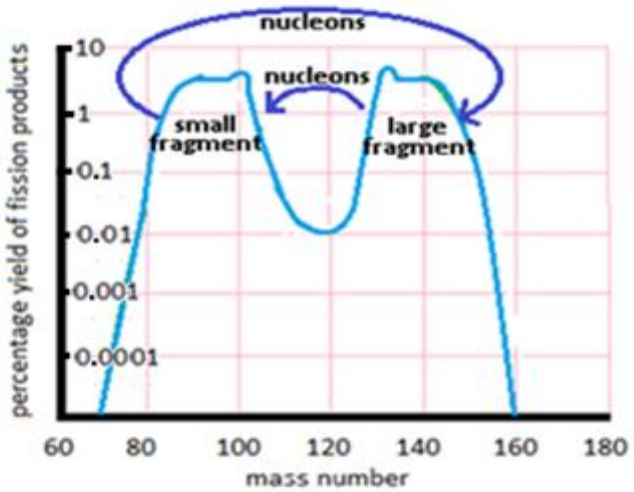
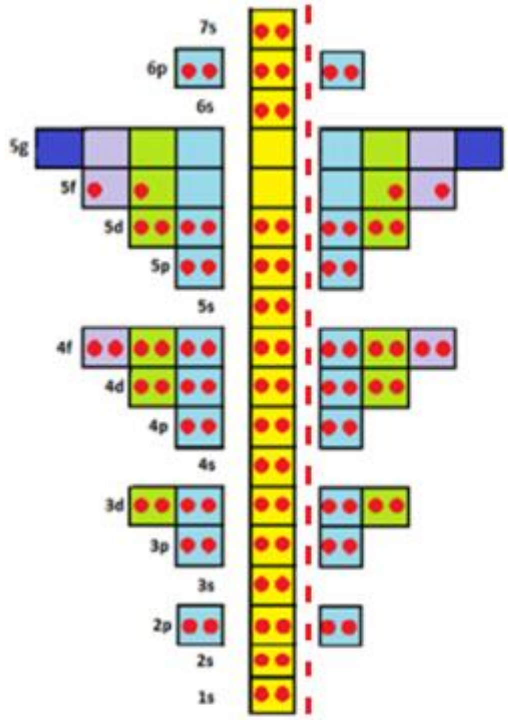


Figure 603: Percentage yields of fission products from "Thermal Neutron" fission of $^{235}U_{92}$

One of the complementary pairs of fragments exist on the internal slopes of the two peaks (fig 602 & 603), in which the small fragment is becoming larger, at the expense of the larger fragment that is gradually becoming smaller; whereas the other complementary pair of fragments exist on the external slopes of the two peaks (fig 602 & 603), in which the larger fragment is becoming even larger, at the expense of the smaller fragment becoming even smaller.

The two high yield peaks on the slow neutron fission product graph (fig 605), represent an initial fragmentation along the demarcation boundary that separates Alpha and Beta DiRs (fig 604); and as part of that dissociation, nucleons transition in both directions between the two subdivisions, but with a net transition of nucleons from large to small fragments. This is what brings the existing 2: 1 ratio (fig 604) between the two main divisions, to a 3: 1 disintegration product ratio associated with the fragmentation of Uranium 235.

Each of the corresponding slopes on either side of the two high yield peaks represents lower probability outcomes, in which nucleons transition between complementary fragments. For instance; the pair of complementary internal (yellow) slopes depicts a transitioning of nucleons from larger fragments to complementary smaller fragments, as separation is taking place (transfer **b** ➡ **a** [fig 605]). Whereas; complementary external (blue) slopes depict a transitioning of nucleons from smaller fragments to complementary larger fragments (transfer **c** ➡ **d**). [Graph 605 on following page]



IpsilonDeltaGamaBeta Alpha BetaGamaDeltaEpsilon
{ 30 } {32} { 30 }

Figure 604: Configuration of ground state Uranium 235

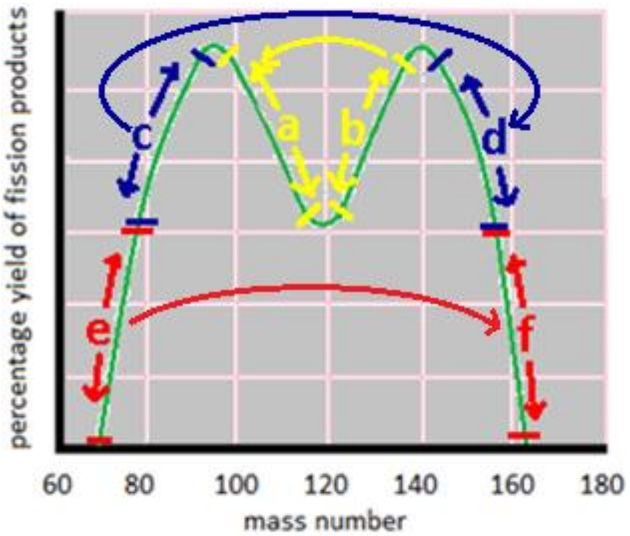


Figure 605: $^{235}U_{92}$ "Slow Neutron" percentage yield of fission product graph

Fragmentations in the red coloured fission product range, located below the central inverted parabola (transfer **e** ➡ **f** *[*fig 605]), correlate to intermediate size fragments having reached a natural equilibrium, in which complementary fragments are identical in size (halfway - point); so there is an equal probability of nucleons going in both directions, with no net change. This implies that there is no more intermediate fragmentation taking place below the inverted parabola. From that point onwards, changes are limited to the outer slopes, where large fragments become even larger at the expense of the smaller fragments becoming even smaller (red zone). In this region of the graph; fragments move towards greater disparity between their relative sizes. These are rare occurrences, but nevertheless continue to occur!

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Notably, Uranium 235 fission product graphs relate to varying numbers of nucleons (mass numbers), rather than being specific to atomic numbers. This implies that nucleons, be they protons or neutrons, are interdependent entities with mutual fluid properties. So once dissociation is initiated alongside the central Alpha DiR; fragmentations comprise completely random compilations of nucleons, based on laws of probability and stability. It also implies that neutrons are not bound to individual protons, but rather co - exist as separate interdependent entities that in some way contribute to the stability of a nuclear structure.

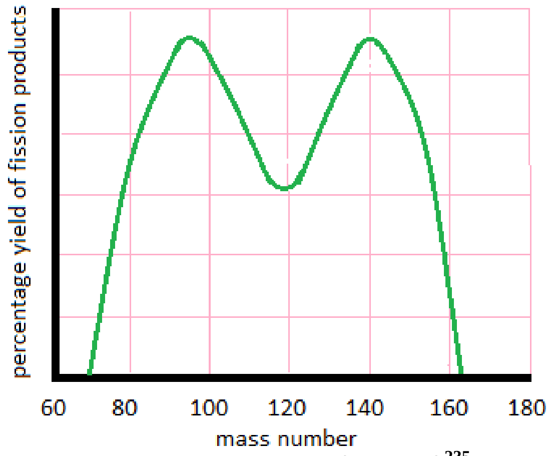

Figure 606: Slow Neutron fission of $^{235}U_{92}$

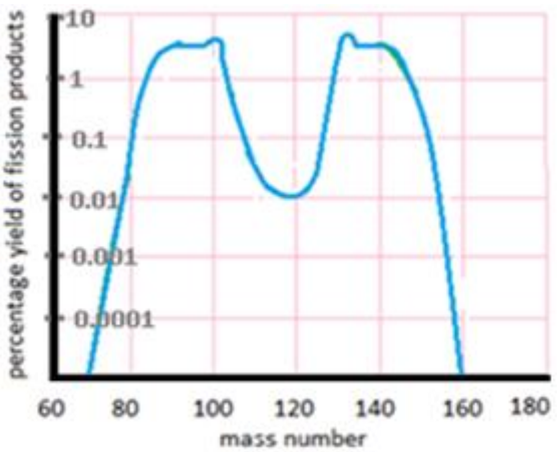

Fig 607: Thermal Neutron fission of $^{235}U_{92}$

Let us for a moment analyse the distinct curvatures of the two graphs. The two narrow peaks on the Slow Neutron graph (fig 606) seem to be indicative of a single initial division, with an accompaniment of nucleons going in both directions during fragmentation, which in turn correspond to lower yield fission products on either side of both high yield peaks. Whereas the broad peaks of the Thermal Neutron graph (fig 607), correspond to a range of equal probability divisions, based on four energised/excited unpaired protons (fig 608) and a complement of neutrons, randomly switching sides during separation. The tiny raised blimps on both peaks of the thermal neutron graph (fig 607) are obviously related to one of the divisions being slightly more favourable than the others; possibly associated with a slight preference for the entire group of energised unpaired protons, transitioning from the larger fragment to the smaller of the two fragments (high elevation to low elevation). The probability of divisions being smaller or larger than the equal probability outcomes, decrease markedly on both flanks of each of the high yield peaks.

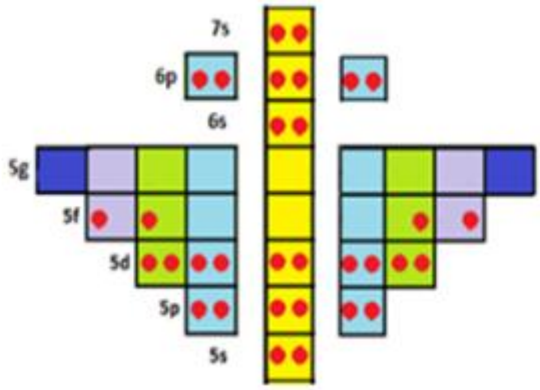

Fig 608: Four unpaired protons in the 5f" energy subshell

Note that internal - facing gradients associated with thermal neutron fission graphs (fig 607) undergo abruptly linear declines, as compared to graduating curvatures at the initial stages of the outer facing slopes. This implies that there are graduating transitions of nucleons from very small to very large fragments (external slopes), as compared to abrupt linear declines in transitions from intermediate large to intermediate small - sized fragments (internal slopes).

It becomes apparent that the "SLA" conceptual inference pertaining to the "disintegration of Uranium 235, and the associated notion of nucleons transitioning in both directions, matches perfectly, and actually replicates the unique characteristics of there being two complementary random pairs of fission products; thereby justifying the large numbers of random Uranium 235 fragmentation reactions (fig 609).

{$^{235}U_{92}$ + 1 neutron => $^{236}U_{92}$ => $^{85}Br_{35}$ + ^{148} La_{57} + 3 neutrons}
{$^{235}U_{92}$ + 1 neutron => $^{236}U_{92}$ => $^{90}Sr_{38}$ + $^{144}Xe_{54}$ + 2 neutrons}
{$^{235}U_{92}$ + 1 neutron => $^{236}U_{92}$ => $^{90}Rb_{37}$ + $^{144}Cs_{55}$ + 2 neutrons}
{$^{235}U_{92}$ + 1 neutron => $^{236}U_{92}$ => $^{94}Sr_{38}$ + $^{140}Xe_{54}$ + 2 neutrons + γ}
{$^{235}U_{92}$ + 1 neutron => $^{236}U_{92}$ => $^{90}Sr_{38}$ + $^{143}Xe_{54}$ + 3 neutrons}
{$^{235}U_{92}$ + 1 neutron => $^{236}U_{92}$ => $^{92}Kr_{36}$ + $^{142}Ba_{56}$ + 2 neutrons}

Fig 609
Some examples of fission product equations

Suddenly the disintegration of Uranium 235 into a random range of fission products seems plausible, and even somewhat anticipated, based on the unpredictable nature of a complex fission process; and if I was to hazard a guess as to why a single neutron causes such carnage to an atomic structure; then it would not be as a direct consequence of physical collisions instigating a fission reaction, but rather as a result of a single neutron violating the fundamental principle of uniform symmetry, by accessing a position that disrupts and thereby destabilizes the structural integrity that is fundamental to its continued existence. In other words; the simple inclusion of a single neutron in an asymmetric position has the potential to

undermine the nuclear structural stability, and bring about a cataclysmic disintegration of Uranium 235.

There is one more notable irregularity that needs to be addressed! Slow neutron fission graphs have a high degree of symmetry, whereas thermal neutron fission graphs are within approximations of being symmetrical, but with distinct irregularities that are clearly not mirror images of each other. Any minor disparity between complementary internal and external slopes contravenes the concept of nucleons switching between complementary fission products, so there needs to be some explanation.

Asymmetry of Fission Reactions

The reliability of a theoretical hypothesis is gauged by the level of conformity with known outcomes, with greater complexities providing a greater likelihood of a hypothesis being accurate. The “SLA” hypothesis has already accounted for general symmetries associated with fission reactions; so the endeavour is to substantiate minor irregularities, in order to provide greater certainty and clarity, regarding more complex fission reactions with lower degrees of symmetry. In other words; the accuracy of a particular theory is a reflection of the precision by which it explains or predicts a range of complex outcomes.

With that in mind! Here - in is the “SLA” perception of irregularities within a Uranium 235 thermal neutron fission reaction.

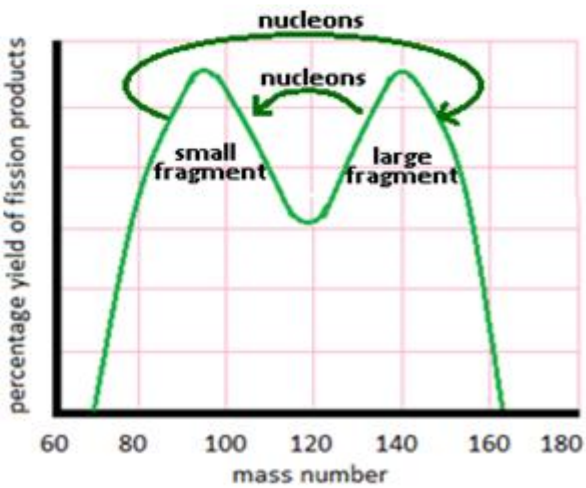

Figure 610: Percentage yield of fission products from “Slow Neutron” fission of $^{235}U_{92}$

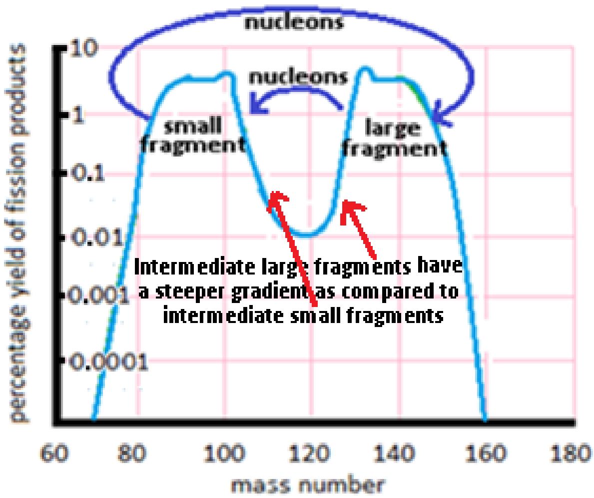

Figure 611: Percentage yields of fission products from “Thermal Neutron” fission of $^{235}U_{92}$

Thermal neutron fission graphs display slight but significant irregularities in both, external and internal facing slopes, which vanquish any semblance of perfect symmetry. The most notable is that the internal gradient on the side of large intermediate - sized fragments is far steeper than the gradient of the complementary intermediate small fragments (fig 611). This implies that there is a far smaller range of intermediate large fragments being produced, as compared to their complementary intermediate small fragments. It therefore becomes apparent that the numbers of nucleons transitioning to one or the other intermediate complementary fragments (internal - facing slopes) are being increased or decreased, without reciprocal adjustments to their complementary fragments. In other words; there are disparities between complementary small and large fragments (external slopes), and intermediate small and large fragments (internal slopes), that are not consistent with the “SLA” perception of nucleons transitioning in both directions between two initial fragments.

If there are no other complications, then fission product graphs ought to display perfect symmetry, in which a decrease in size of one fragment corresponds to a precise increase in the size of its complementary counterpart fragment, for this hypothesis to be upheld. This only occurs in slow neutron (fig 610) and exceedingly high energy fission reactions. Whereas thermal neutron fission reactions (fig 611), and a range of energized fission reactions, exhibit varying degrees of asymmetry between complementary internal and external slopes, as well as irregularities in opposing high yield peaks.

Asymmetry to any extent implies that some type of interaction is causing one of the complementary fragments to increase or decrease, without reciprocal adjustments to its complementary fragment. The reliability of a theoretical hypothesis is gauged by the level of conformity with a complete gamut of abnormal irregularities. In other words; there needs to be some logical justification that accounts for asymmetric digressions that deviate from prescribed symmetrical outcomes.

Transitions between two fragments are complementary when one fragment gains or loses nucleons directly from

another fragment; thereby culminating in perfectly symmetrical percentage yield fission product graphs. However, nuclei are not rigid structural entities that fracture in two distinct pieces, because they exhibit fluid properties that are in a state of continual equilibrium. In other words; fragmentations are not static, in that transitions are time - dependent, which implies that both complementary fragments are undergoing incremental changes in real - time, while transitions are taking place. Consequently, disintegrations are not static divisions, but rather evolving transitions between varying - sized fragments. It is therefore apparent that transitions are moving simultaneously in both directions between fragments that have already lost or gained nucleons.

Several variables contribute toward asymmetric digressions in percentage yield fission product graphs. One involves an initial fission reaction inducing two autonomous fragments (fig 612), with each having natural inclinations to re - establish their own independent nuclear structures. However, re - establishing independent nuclear structures commences at the instant that separation begins to take place, while fragments are still in some way partially connected, or within reach of each other.

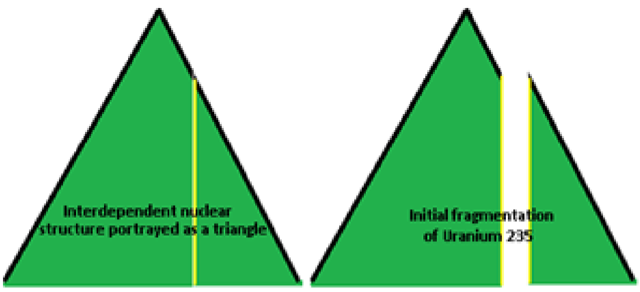

Figure 612: Fragmentation of $^{235}U_{92}$ along a demarcation boundary between Alpha and Beta DiR's.

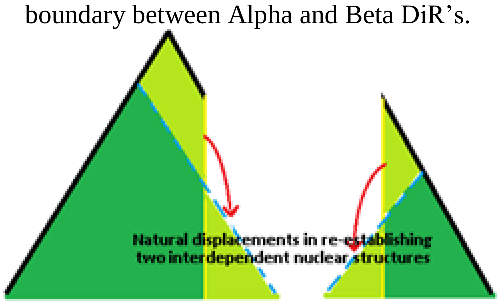

Figure 613: Fragments undergo natural dispersion and then reassemble as separate smaller entities

Fluid properties insure that fragmentations undergo active back and forth interactions at different rates (fig 613), as separation is taking place. Such transitions are no longer complementary because they are not between two original fragments. Fragments are thereby undergoing simultaneous incremental changes of gaining and losing nucleons, while fragmentation is taking place. It is a random process based on the laws of probability and stability; which nullifies any semblance of perfect symmetry between complementary internal and external slopes.

There are a number of criteria by which to gauge the level of interaction between fragments, once disintegration disrupts existing structural equilibriums. One is based on the physical disparity between adjacent fragments, in which high concentrations/elevations spread into low concentrations/elevations. However, these are not totally unrestrained nucleons; for they exist within the realm of established building blocks that are endeavouring to re - establish their own independent configurations (fig 612); all of which are founded on "SLA" principles of structural stability.

Nuclear structures are far more complex than static accumulations of nucleons, given that parallel orbital pathways instigate an entirely new Coriolis force; so the impetus for symmetry and stability of a nuclear structure is based on multifaceted equilibriums between competing Coriolis and nuclear binding forces.

Admittedly; the force that holds nucleons together is somewhat of a mystery, however, it is still in some way associated to the numbers of nucleons. So in reality a nuclear binding force is actually referring to the impetus for nucleons to aggregate into a symmetrical compound structure (similar to surface tension, in the process of inducing spherical liquid droplets); whereas rearrangement potential is referring to the impetus for a compromised structure to re - attain approximations to a spherical compound structure (stable equilibrium), once the integrity of a structure has been disrupted. I state approximation of spherical symmetry, because Coriolis forces may distort the spherical shape of a nuclear structure.

This implies that a nuclear structure incorporates two competing forces; one being a nuclear binding force, in association with a Coriolis force; in which circulating momentums within a spherical environment aspire to a Coriolis inspired pressure gradient towards regions of larger circumference. Coriolis is an applied force that is perpendicular to any straight line motion around a sphere, directed towards regions of larger circumferences, when the plane of that motion does not dissect a sphere in half. This implies that a Coriolis force is dependent upon the relative position of each nucleon within a circulating sphere.

It therefore becomes apparent that uneven divisions of a sphere produce two distinct contrasting Coriolis effects, based on the size and position of each fragment. Fragments occupying greater than half the spherical volume of an atom, induce an inwardly directed Coriolis - force in the direction of the largest circumference (centre of gravity) (fig 614); whereas fragments occupying lesser than half the spherical volume, induce a Coriolis - force that is directed away from the small fragment's centre of gravity (fig 614).

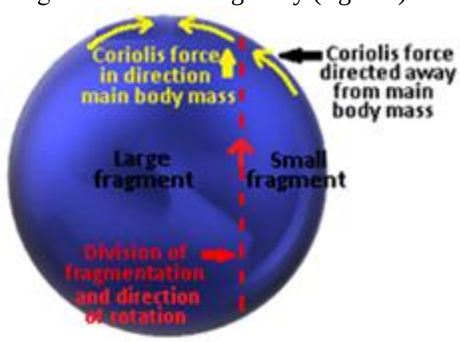

Figure 614: Coriolis force induced by unequal divisions

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This implies that in the initial stages of a disintegration process, transitions between fragments abide by an assortment of competing "nuclear binding" and Coriolis forces that can as a consequence, induce slight but significant irregularities in both, external and internal facing slopes of percentage yield fission product graphs; thereby nullifying any prospect of perfect symmetry.

It is difficult to assess the practicality of such fragmentation. However, if one could envisage a liquid - filled swirling glass sphere (swirling in line with nuclear orbitals); and if that sphere consists of two separate compartments lightly held together (corresponding with the divisions of fragmentation in fig 614); then upon separation, the swirling fluid is likely to induce an inward Coriolis - force in the direction of the larger fragment; in combination with independent outward - directed dispersion forces (rearrangement potential to attain symmetrical structures) enacting on each division. It is therefore apparent that competing forces are not in direct opposition, because Coriolis forces are greatest around the outer perimeter of a sphere, whereas dispersion forces predominantly span out from each fragment's centre of gravity. Consequently, it is conceivable for each of the two forces to work around each other to produce the desired outcome.

It is within this context that fragmenting nuclear structures endeavour to re - establish two independent nuclear structures, from the remnants of an initial fission reaction. So it is a combination of distinct "nuclear binding", (i. e. disbanding potential), as opposed to two distinct Coriolis forces that culminate in a very complex interchange of nucleons between fragments (information pending), that ultimately produce such a unique range of fission products.

There are several additional variables to take into consideration; for instance, opposing flows are also likely to obstruct each other; in which case a dominant flow of nucleons from large to small fragments is likely to physically impede, and eventually overwhelm a minor flow of nucleons in the opposite direction (from small to large fragments). This implies that natural dispersion/interchange from high concentrations to low concentrations between fragments is restricted to transitions of nucleons from large to small fragments; while Coriolis forces are responsible for transitions of nucleons in the reverse direction, from small to large fragments. Both of these opposing transitions are occurring simultaneously in real - time, and at different rates, between varying size fragments that have already lost or gained nucleons.

There is even a possibility that the rate of separation, as compared to the rate of interaction between fragments may play a role in the final outcome. However; rates of fragmentations and transitions are difficult to ascertain, but it is worth keeping an open mind.

In any case; the following is a running commentary of prospective interactions, based on contours of slow neutron, thermal neutron, and high energy Uranium 235 fission product comparisons; thereby providing a reasonable conjecture regarding types of interactions that are transpiring.

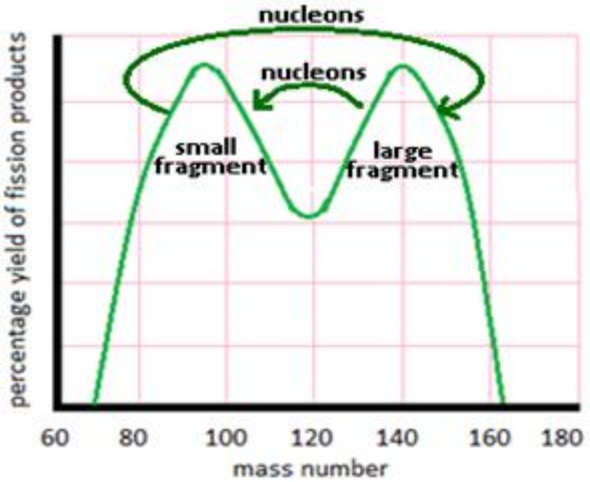

Figure 610: Percentage yield fission products from "Slow Neutron" fission of $^{235}U_{92}$

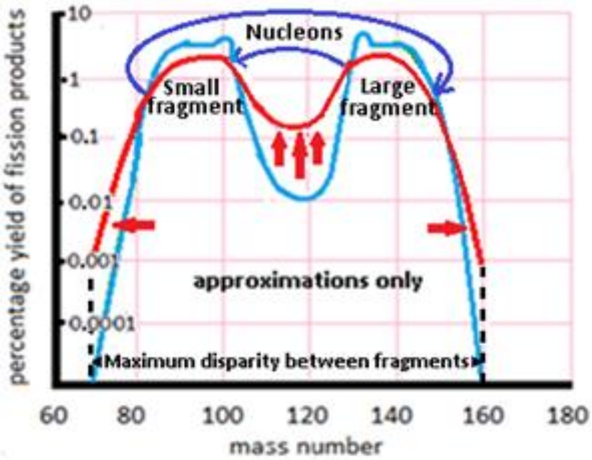

Figure 611: Percentage yield "Thermal Neutron" (blue) fission products and "High Energy" (red) fission of $^{235}U_{92}$

In the first instance; it is proposed that fission reactions initially produce two high yield fragments, which then interact back and forth during separation, to produce a series of lower yield fission products.

It becomes apparent that decreasing yields signify a trend that increased numbers of nucleons are progressively harder to transition between complementary fragments. Keep in mind that nucleons are transitioning between fragments, which implies that the proximity of fragments are within range for dispersions to overlap in the mid - region. The maximum displacement of nucleons from large to small fragments (internal slopes) is achieved when equilibrium is attained between two equal - sized fragments; thereby culminating in transitions being equal in both directions.

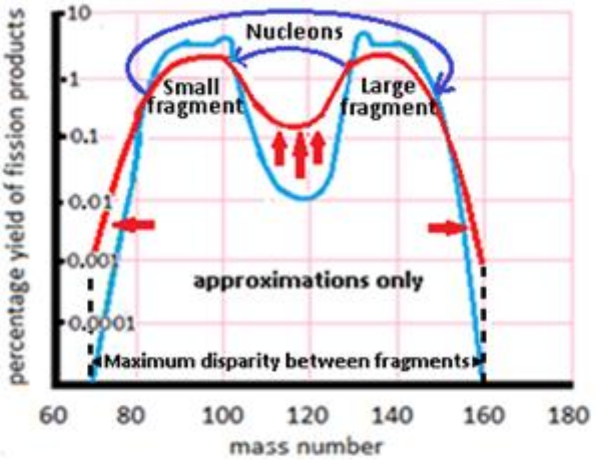

Figure 611: Percentage yield "Thermal Neutron" (blue) fission products and "High Energy" (red) fission of $^{235}\mathbf{U}_{92}$

In regards to high energy (red graph) fission reactions; increased energy provides greater liquidity, causing increased transitions between fragments; both in terms of Coriolis induced interactions and natural dispersions between fragments. This implies that dispersions from large to small fragments are attained at much faster rates (higher yields); effectively decreasing the depth of the inverted parabola (dependent upon the level of energy), and eventually converting two adjacent peaks into a single upright hump. Increased fluidity ultimately induces mid - regional equilibriums between equal - sized intermediate fragments, before separation has been concluded. This action prevents any net transitions of nucleons from large to small fragments, and in the process eliminates the prominent inverted parabola, in favour of a single upright hump. The consequential outcome is that a customary four fission product reaction is transformed into a two fission product reaction, which by definition must be symmetrical and complementary. Meanwhile; transitions from small to large fragments are likewise accelerated, which culminate in graduating increases in comparative percentage yields of low yield fission products (relative to Thermal Neutron fission reactions); as fragments attain greater disparity (fig 611). This is what increases the percentage yields of outlying fission products from the blue to the red line graph (fig 611). It follows that increased percentage yields of low yield fission products come at the expense of high yield fission products, which are visibly reduced on adjacent high yield (red) fission product peaks (fig 611). In other words; high yield fragments are progressively being transformed into lower yield fragments.

Admittedly, it is incredibly difficult to describe the precise sequences of the interactions, and hopefully, readers can appreciate the complexities involved.

It is quite remarkable that prescribed "SLA" sequences of events are consistent with both, the symmetry of Slow Neutron percentage yield fission product graphs, and with asymmetric irregularities of Thermal Neutron percentage yield fission product graphs; but ultimately conform to the entire range of both symmetric and asymmetric high energy fission reactions! It may therefore be concluded that disintegration of Uranium 235 abides perfectly with the predicted "SLA" properties of nuclear structure.