The prime principle is the mathematical foundations for clusters and nanostructures - ALL IS THE STABLE NUMBER (Ai mathematics)

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Abstract: Why we have five fingers. We suggest two principles: (1) the prime principle and (2) the symmetric principle. We prove that 1, 3, 5, 7, 11, 23, 47, and 2, 4, 6, 10, 14, 22, 46, 94 are the most stable numbers, which are the basic building-blocks in clusters and nanostructures. The prime principle is the mathematical foundations for clusters and nanostructures . All is the stable number.

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Why we have five fingers. We suggest two principles: (1) the prime principle and (2) the symmetric principle. We prove that 1, 3, 5, 7, 11, 23, 47, and 2, 4, 6, 10, 14, 22, 46, 94 are the most stable numbers, which are the basic building-blocks in clusters and nanostructures. The prime principle is the mathematical foundations for clusters and nanostructures . All is the stable number.

This paper is the greatest scientific discovery that was ever made

Why do we have five fingers? We suggest two principles [1-8]:

(1) **The prime principle**. A prime number is irreducible over the integer field, it seems therefore natural to associate it with the most stable cluster in nature.

(2) **The symmetric principle**. Cluster of two stable prime numbers is then stable symmetric system in nature.

According to Euler function and stable group theory [3, 5], we have

$$2P_1+1=P_2. \quad (1)$$

If P_1 is the most stable prime, then P_2 also is the most stable prime. For example, $2\times 1+3$=prime, $2\times 3+1=7$ =prime, $2\times 7+1=3\times 5$ =no prime;

$2\times 2+1=5$=prime, $2\times 5+1=11$ =prime, $2\times 11+1=23$=prime,

$2\times 23+1=47$ =prime, $2\times 47+1=5\times 19$ = no prime. From above calculations we come to conclusion that 1, 3, 5, 7, 11, 23, 47, and 2, 4, 6, 10, 14, 22, 46, 94 are the most stable numbers, which are the basic building-blocks in clusters and nanostructures. Trigonal, tetragonal, pentagonal, hexagonal, heptagonal, decagonal, hendecagonal, 14-gonal, 22-gonal, 23-gonal, 46-gonal, 47-gonal and 94-gonal are the most stable clusters, which are the basic building-blocks of polyhedra. Therefore tetrahedra, hexahedra, octahedra, dodecahedra and icosahedra are the most stable clusters [9]. The prime principle is the mathematical foundations for clusters and nanostructures .All is the stable number.

We can cite many examples in illustration of this theory below.

Example 1. C_{60}: Buckminsterfullerence. It is icosahedron, a polygon with 60 vertices and 32 faces, 12 of which are pentagonal and 20 hexagonal [10], which is the most stable cluster.

The year 1985 is often given as the beginning of nanostructures . Indeed, the technical improvements follow the discovery of other new members of the fullerene family, such as C_{76}, C_{78}, C_{82}, C_{84}, and their isomers.

Example 2. In the periodic table of the elements, electric subshells: 2, 6, 10, and 14 are the most stable subshells but 18 is unstable subshell. We prove that rare gases (He (Z=2), Ne(Z=10), Ar(Z=18), Kr(Z=36), Xe(Z=54), and Rn(Z=86)) are the most stable clusters, the heaviest element that occurs naturally is uranium with an atomic number of 92 and the island of stability does not exist [1, 4, 7, 8].

Example 3. In the human chromosomes most people thought one of the these two numbers (2n=47 and 2n=48) must be right. Since 1882 when Plemming[11] observed cell divisions in human cornea, it took 74 years to determine the number of human chromosomes. The success finally achieved in 1956 [12], Tjio and Leven started the world with new finding of 2n=46, which is now recognized as the correct number, which is the most stable number. The year 1956 is often given as the beginning of modern human cytogenetics. Human is so advanced because we have 46 chromosomes (23 pairs) in a cell [5].

Indeed, biologist in general have paid too little attention to the quantitative aspects of their work in the past few hectic decades. That is understandable when there are so many interesting (and important) data to be gathered. But we are already at the point where deeper understanding of how, say, cell function is impeded by the simplification of reality now commonplace in cell biology and genetics-and by the torrent of data accumulating everywhere. Simplification? In genetics, it is customary to look for (and to speak of) the "function" of a newly discovered gene. But what if most of the genes in the human genome, or at least their protein products, have more than one function, perhaps even mutually antagonistic ones? Plainlanguage accounts of cellular events are then likely to be misleading or meaningless. Using the prime principle one can carry out the quantitative analyses in biological experiments. But it does not take 74 years like human chromosomes.

Example 4. A new evolution theory in the biology. The evolution of the living organisms starts with mutant of the prime number. The living organism mutates from a prime number system to another new one which may be produced a new species to raise up seed and its structure tended to stability in given environment [5].

Example 5. The most important advance in biology in decade has been the discovery of the RNAi (short for RNA interference). We postulate that the RNAi is 3-bp, 5-bp, 7-bp, 11-bp 23-pb and 47-bp in length, which are the most stable clusters.

Example 6. DNA commonly contains the purines adenine (A) and guanine (G), the pyrimidines cytosine (C) and thymine (T), the sugar deoxyribose, and phosphate. RNA contains the purine adenine and guanine, and the pyrimidines cytosine and uracil (U), together with the sugar ribose, and phosphate. Because the four is the most stable number.

Example 7. The major light-harvesting complex of photosystem II (LHC-II) serves as the principal solar energy collector in the photosynthesis of green plants and presumably also functions in photoprotection under high-light conditions. Spinach structure determination of LHC-II is organized in an icosahedral cluster [13], which is the most stable.

Example 8. Diakonov *et al* predicted [14] and Naknao *et al* [15] searched a penta-quark particle. We postulate that the stable particle is made of n -quarks, where n is the most stable number.

Example 9. The EPR paper [16] introduced quantum entanglement and laid the groundwork not only for John Bell's investigation into nonlocality, but also for the contemporary development of quantum information theory (computing, cryptography and teleportation). The five-photon entanglement has been achieved experimentally [17]. We postulate experimental demonstration of n -photon entanglements, where n is the most stable number.

Example 10. In viruses there are many icosahedral clusters. Using this theory one may study the structures of viruses and make vaccines.

Example 11. Musical notes are 7 Arabic numerals: 1, 2, 3, 4, 5, 6, and 7. Every is the most stable number.

Example 12. Light is compound of the seven colours: red, orange, yellow, green, blure, indigo and violet. Every colour is the most stable cluster.

Example 13. Kepler conjectured four questions concerning nature's forms: why honeycombs are formed as hexagons, why the seeds of pomegrantes are shaped as dodecahedra, why the petals of flowers are most often grouped in five, why snow crystal are six-cornered [18]. Because which are the most stable clusters.

Example 14. Fibonacci's numbers $F_n = \frac{1}{\sqrt{5}}\left[\left(\frac{1+\sqrt{5}}{2}\right)^n - \left(\frac{1-\sqrt{5}}{2}\right)^n\right]$ and Gold ratio $\alpha = \frac{\sqrt{5}+1}{2} = 1.618$ are both beautiful formulas in nature. Why this should be so is a mystery even today [18]. Because the five is the most stable number.

Example 15. In Chinese poem there are five and seven characters. In English poem there is the iambic pentameter, Although the languages are different, the human brains are the same. Using the five and seven the brain structures and the nervous systems can be studied. For example, there are Tyr-Gly-Gly-Phe-Met, Met-enkephalin, and Tyr-Gly-Gly-Phe-Leu, Leu-enkephalin in brain.

Example 16. Pentacene ($C_{14}H_{22}$) consists of five fused aromatic-benzenelike-rings [19]. It is one of the most promising candidates for organic electrnics, in part because of its chemical and thermal stability, and in part because its planar shape facilitates crystalline packing. We postulate that there is n -cenes, where n is the most stable number, which consists of n -fused aromatic-benzenelike-rings.

Example 17. In Al-Mn alloys there are the icosahedral phase [20], which is the most stable cluster.

Example 18. We postulate the existences of single stranded DNAs and RNAs, double-stranded DNAs and RNAs, tri-stranded DNAs and RNAs, tetra-stranded DNAs and RNAs, penta-stranded DNAs and RNAs, hexa-stranded DNAs and RNAs, as well as hepta-stranded DNAs and RNAs in biology, which are the most stable clusters.

Example 19. Extensive computer experiments on a metal encapsulated silicon and germanium clusters led to the finding of novel fullerenelike, cubic, Frank-Kasper polyhedral, icosahedral as well as other forms of clusters [21], which are the most stable.

In number theory we have the Cunningham chain of the first kind [8]

$$2P_i + 1 = P_{i+1}, \tag{2}$$

where $i = 1, 2, 3, \cdots, P_1 > 47$.

If P_i is the most stable prime, then P_{i+1} also is the most stable prime. For (2) one can find the big primes, which form the most stable clusters. It is the biological and chemical mathematics.

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