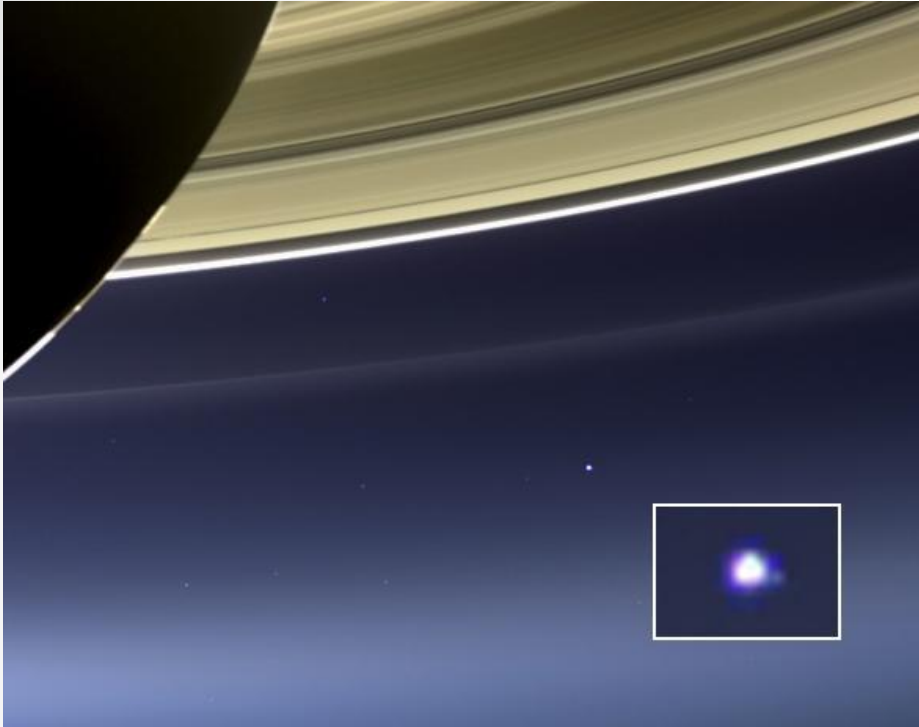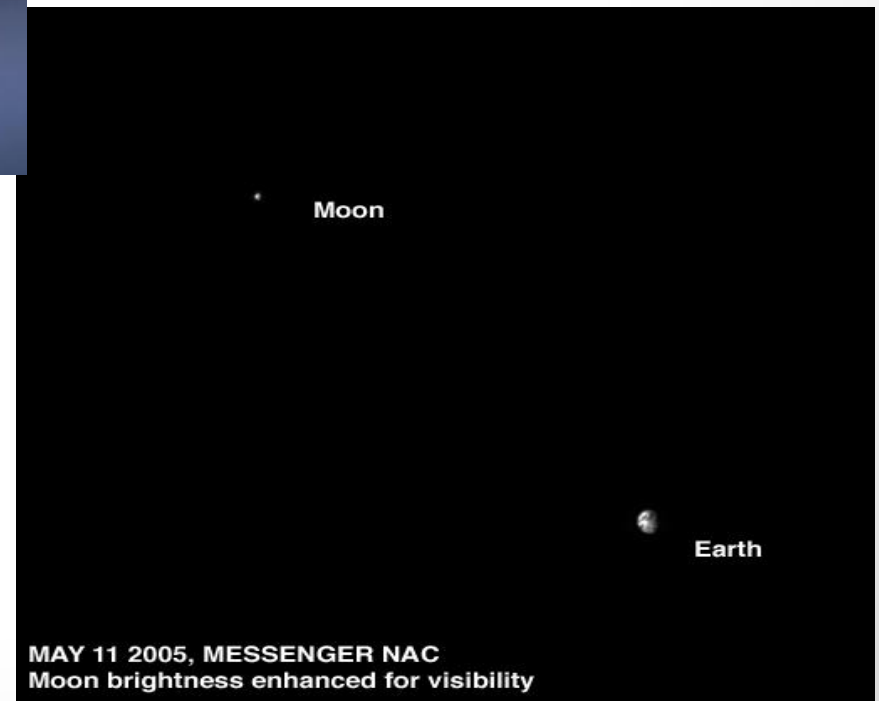بسم الله الرحمن الرحيم

In the name of God, the All Gracious, the All Merciful

Cassini Picture of

the Earth from Saturn

Messenger Picture of

the Earth and the Moon

from Mercury

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Curiosity Picture of the Earth from the surface of Mars

The Local Group

The Andromeda Galaxy, M31

The Triangulum Galaxy, M33

The Milky Way
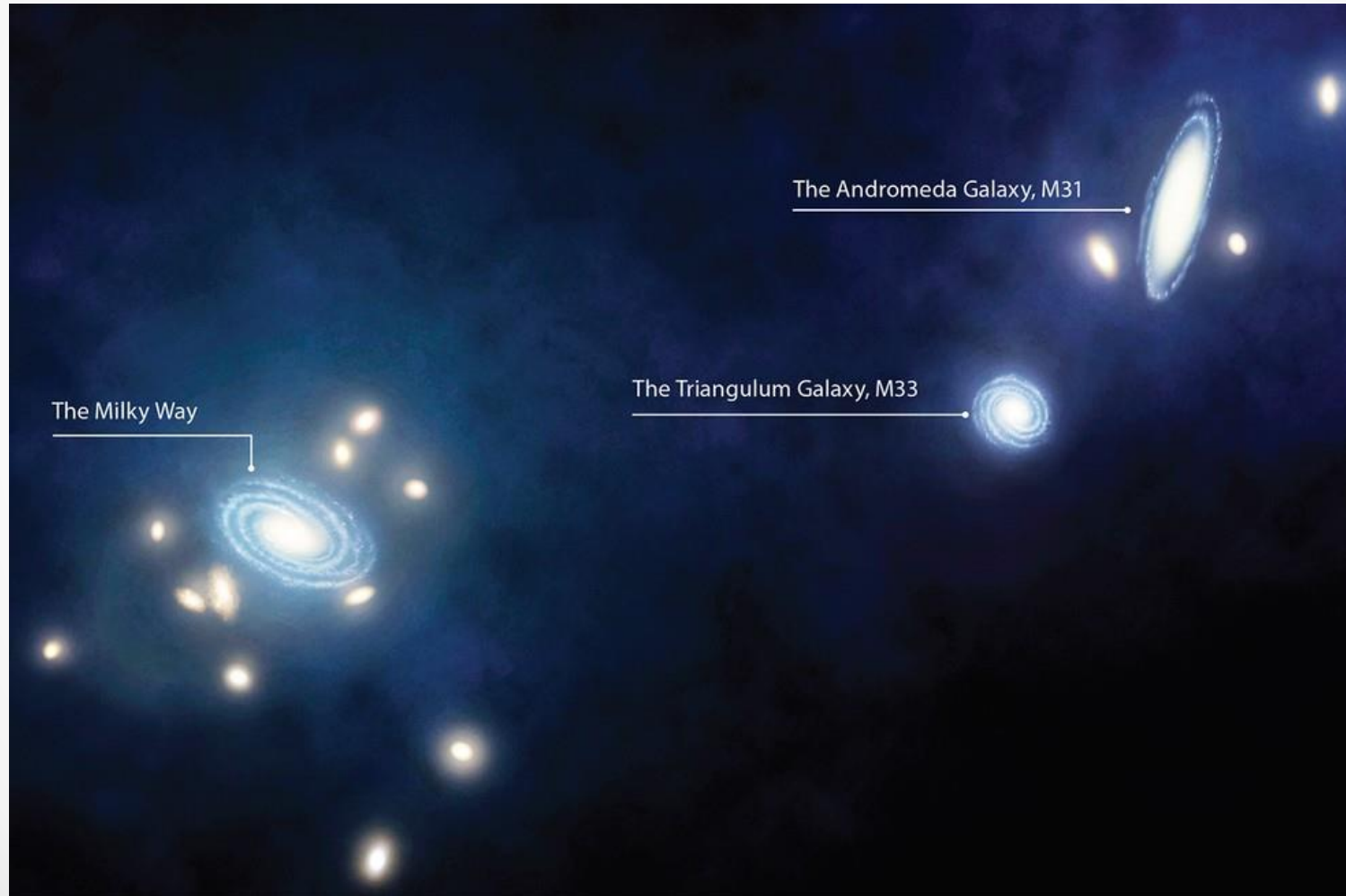
Prime-Index Generator of the Quran

A Visual Presentation

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Prime-Index Mathematics Generator of the Quran

17:36 - And do not accept anything that you have no knowledge thereof. Indeed, you have the hearing, the eyesight and the mind and you are responsible for using them.

Prime-Index Mathematics Generator of the Quran

I do not feel obliged to believe that the same God who has endowed us with sense, reason, and intellect has intended us to forgo their use.

Galileo Galilei (15 February 1564 – 8 January 1642)

Prime-Index Mathematics

- Introduction
- Primes, Composites, Twin Primes, Twin Prime Companions, Mersenne Primes, Gaussian Primes, Gaussian Composites, Semi-primes, ….. and their indices
- Group Structures
- Number bases
- Second Lecture
- Description of the Generator of the Quran
- Conclusions

Prime Numbers

- Prime numbers are numbers that are divisible by themselves and "one" only.

- It is a formidable mathematical challenge to determine if a number is prime. Many algorithms have been developed to find new prime numbers.

- No method exists linking primes to their positional rank. For example, the 1143rd prime can only be realized by indexing every prime from the first one, 2, to the 1143rd, which is 9221.

- Understanding Primes would lead to appreciating the complexity of composites, twin primes, lonely primes, factorization of semi primes and other number theory problems.

Prime Numbers

- First we must establish if a number is a prime.

- For example, is the number 2747 prime?

- Let us see. It is odd so it is not divisible by 2. Is it divisible by 3?

- 2 + 7 + 4 + 7 = 20

- 20 is not divisible by 3, therefore it is not divisible by 3.

- We try for awhile and we finally find out that 2747 is divisible by 41! So it is not a prime.

Index	1	2	"	5	"	8
Prime	2	3	"	11	"	19

What is a composite number?

A composite number is number which can be factored into prime numbers.

For example, 4 is a composite number because,

4 = 2 × 2,

or,

2346 = 2 × 3 × 17 × 23.

Index	1	2	"	5	"	8
Composite	4	6	"	10	"	15

What are Lonely Primes?

Lonely primes are primes that are generated when we remove all twin primes from the set of prime numbers.

For example,

- 2
- 37
- 1187
- 9619

are all Lonely Primes.

*Note, these primes are referred to as "isolated" primes on Wikipedia.

Index	1	2	"	8	"	19
Prime	2	23	"	83	"	223

Additive Primes

Now let us look at another class of primes. These are primes such that the sum of their digits are also primes. These are a subset of primes, but a lot less common than ordinary primes.

For Example;

9127

where we have,

9 + 1 + 2 + 7 = 19

is an additive prime

Index	1	2	"	6	"	19
Composite	4	6	"	11	"	139

Indexal Additive Primes (IAP)

Now let us look at another class of primes. These primes are the sum of a prime and its index. These are a subset of primes, but a lot less common than ordinary primes.

Index + Prime = Prime

For Example;

4 + 7 = 11

is an IAP

Index	1	2	"	8	"	19
Index	1	2	"	26	"	98
	+	+	+	+	+	+
Prime	2	3	"	101		521
	=	=	=	=	=	=
IAP	3	5	"	127		619

Mersenne Primes

Mersenne Primes are of the form $\mathbf{M}(p) = 2^p\text{-}1$

The list of some of the Mersenne Primes with their index

Index	Exponent (p)	Mersenne Prime
1	2	2^2 -1 = 3
2	3	2^3 -1 = 7
3	5	2^5 -1= 31
4	7	2^7 -1 = 127
5	13	2^{13} -1 = 8191
"	"	
19	4253 A.Hurwitz (1961)	2^{4253} -1 = 19079700…484991, Number of digits = 1281

Gaussian Primes (GP)

A Gaussian integer of the complex form $a + bi$ *where*

$i = \sqrt{-1}$ is a **Gaussian prime** if and only if either:

- one of a, b is zero and absolute value of the other is a prime number of the form **4n + 3** (with n a nonnegative integer), or

- both are nonzero and $a^2 + b^2$ is a prime number (which will *not* be of the form **4n + 3**) such as

17 = (4 + i)(4 - i) which I refer to as **Gaussian Composite**

Index	1	2	"	10	"	19
Gaussian Prime	3	7	"	67	"	151

Gaussian Mersenne Primes

If we regard the ring of Gaussian integers, we get the case **b = 1 + i** and **b = 1 – i**, for which the complex number **$(1 + i)^n – 1$** is a Gaussian prime which will then be called a <u>Gaussian Mersenne prime</u> (GMP)

$(1 + i)^p – 1$ is a Gaussian prime for the following **p: 2, 3, 5, 7, 11, 19, 23 …..**

Like the sequence of exponents for usual Mersenne primes, this sequence contains only (rational) prime numbers. As for all Gaussian primes, the norms (that is, squares of absolute values) of these numbers are rational primes: **5, 13, 41, 113, 2113, 525313, 536903681, 140737471578113, ...**

| Index	1	2	"	7	"	19
Exponent of GMP	4	6	"	29	"	353

Semiprimes(from Wikipedia)

In mathematics, a semiprime (also called biprime or 2-almost prime, or pq number) is a natural number that is the product of two (not necessarily distinct) prime numbers.

In the RSA (Rivest, Shamir, and Adleman) Factoring Challenge, RSA Security offered prizes for the factoring of specific large semiprimes and several prizes were awarded. The most recent such challenge closed in 2007.

Arecibo Message

The Arecibo message was broadcast into space a single time via FM radio waves at a ceremony to mark the remodeling of the Arecibo radiio telescope on 16 November 1974. It was aimed at the globular star cluster M13 some 25,000 light years away because M13 was a large and close collection of stars that was available in the sky at the time and place of the ceremony. The message consisted of 1679 = (23 × 73) binary digits, approximately 210 bytes, transmitted at a frequency of 2380 MHz and modulated by shifting the frequency by 10 Hz, with a power of 1000 kW.

- The numbers one (1) to ten (10)
- The atomic numbers of the elements hydrogen, carbon, nitrogen, oxygen, and phosphorus, which make up deoxyribonucleic acid (DNA)
- The formulas for the sugars and bases in the nucleotides of DNA
- The number of nucleotides in DNA, and a graphic of the double helix structure of DNA
- A graphic figure of a human, the dimension (physical height) of an average man, and the human population of Earth
- A graphic of the Solar System
- A graphic of the Arecibo radio telescope (Wikipedia)
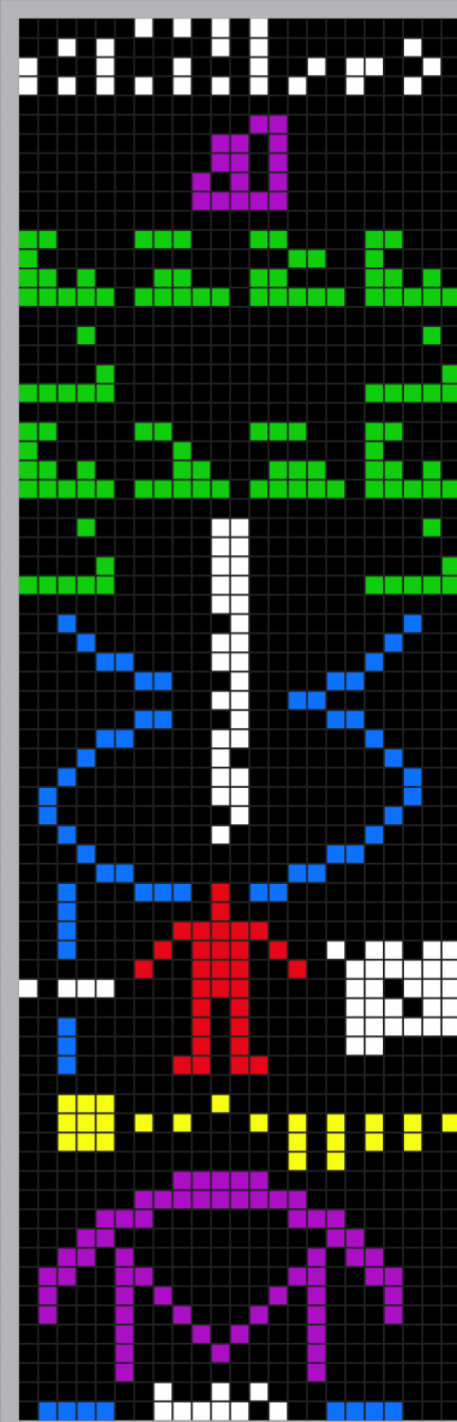
Some Semiprimes

1	4
2	6
"	"
7	21
8	22
"	"
15	39
"	"
19	55
"	"
27	82
"	"
30	87

Number Bases

Base 2 (Binary)	Only 0 and 1
Base 8 (Octal)	From 0-7
Base 13	From 0-12
Base 16 (Hex)	From 0-15
Base 19	From 0-18

<u>Examples</u>

13 in base 19 is 22 in base 10
19 in base 13 is 22 in base 10
19 in base 10 is 10011 in binary
19 in base 10 is 23 in octal
76 in base 10 is 114 in octal
23 is base 10 is 10111 in binary
2698 in base 10 is 790 in base 19
e.g.,
$2698_{10} = 790_{19}$

Prime-Index Mathematics, the Generator of the Quran

A 19-based mathematics involving primes, composites, twin primes, twin prime companions, Gaussian primes …. and their indices.

Quran - 74:30 -- Over it is 19.

The mathematics encompasses primes, twin primes, positional additive, subtractive primes and Composites, semi-primes, tri-primes … and Group Theory. Extensive relations among indices of primes, composites, twin primes, Gaussian primes, semi primes , tri-primes … etc are being studied for the first time.

This mathematics is beyond human knowledge!

Quran, an Introduction

The Quran was revealed on the 27th of Ramadan in the year 610 AD to Prophet Muhammad.

Every chapter or sura in the Quran starts with the statement
"In the name of God, the All Gracious, The All Merciful", except for sura 9.

Sura 27 contains two such statements.

Total frequency of occurrence of the opening statement is therefore 114 which is the number chapters in the Quran.

Quran, an Introduction

A unique aspect of the Quran, never seen in any other book or work of literature, is that 29 of its suras are prefixed with a number of Arabic letters. These Arabic letters were referred to, first by R. Khalifa [1], as the Quranic initials, and these suras as the initialed suras.

[1] "Visual Presentation of the Miracle", R. Khalifa, Ph.D., Tucson, AZ (1981).

Quran Parameters

- 114 Chapters or Suras
- 6,234 numbered verses
- 6,346 total verses
- 29 Initialed chapters (Sura 42 has two sets of initials)
- 85 un-initialed chapters
- The total number of word God in the Quran is 2698
- Based on the "Hafs" version of the Quran only, except for sura 9 having 127 verses.

Integer numbers in the Quran in ascending order

Index	Quranic numbers	Index	Quranic numbers
1	1	16	40
2	2	17	50
3	3	18	60
4	4	19	70
5	5	20	80
6	6	21	99
7	7	22	100
8	8	23	300
9	9	24	500
10	10	25	1,000
11	11	26	2,000
12	12	27	5,000
13	19	28	10,000
14	20	29	50,000
15	30	30	100,000

All numbers in the Quran in ascending order

Index	Quranic number	Index	Quranic number
1	$\frac{1}{10}$	20	12
2	$\frac{1}{8}$	21	19
3	$\frac{1}{6}$	22	20
4	$\frac{1}{5}$	23	30
5	$\frac{1}{4}$	24	40
6	$\frac{1}{3}$	25	50
7	$\frac{1}{2}$	26	60
8	$\frac{2}{3}$	27	70
9	1	28	80
10	2	29	99
11	3	30	100
12	4	31	300
13	5	32	500
14	6	33	1,000
15	7	34	2,000
16	8	35	5,000
17	9	36	10,000
18	10	37	50,000
19	11	38	100,000

Generators

Index	Prime	Composite
19	67	30

- Chapter 67 has 30 verses
- 19 × 67 = 1273
- The number of word "God" from the beginning of the Quran to 9:127 is 1273.
- 19 × 30 = 570
- 570th Gaussian Prime is 9127
- Chapter 32 has 30 verses.
- The Frequency of the initials A.L.M. in sura 32 is 570.
- The 30th Prime is 113; 19 × 113 = 2147
- 2147 is the frequency of Ha + Meem in 40-46

The Exponent of the 19th Mersenne Prime is 4253

- Chapter 42 has 53 verses.

- Note, Chapter 42 is the only chapter which has two sets of initials

The permutation group Properties of 4253

Index	Element	Index	Element
1	2345	13	4235
2	2354	14	4253 (p)
3	2435	15	4325
4	2453	16	4352
5	2534	17	4523 (p)
6	2543 (p)	18	4532
7	3245	19	5234
8	3254	20	5243
9	3425	21	5324
10	3452	22	5342
11	3524	23	5423
12	3542	24	5432

The permutation group Properties of 4253

- The group element **19** is **5234** and it is the **4537**th composite.

- Sura **45** has **37** verses.

- The group element **22** is **5342** and it is the **4635**th composite.

- Sura **46** has **35** verses.

The permutation group Properties of 4253

- The group element 9 is 3425 and it is the index of composite 3975.

- Sura 39 has 75 verses.

- Note sura 39 is the 19th un-initialed sura in the Quran.

- The group element 10 is 3452 and it is the 2969th composite.

- Sura 29 has 69 verses.

The permutation group Properties of 4253

- The group element **15** is **4325** and it is the Tri-prime.

- The index of the Tri-prime **4325** is **1103**.

- Note sura **110** has **3** verses.

- In the order of revelation **1103** becomes **1143 = 9 ×127**

Properties of 4253

- The 4253rd Gaussian prime is 87407

- The 1121st individual Twin Gaussian prime is 87407

- The number of frequencies of H.M. in Suras 40, 41 and 42 is 444 + 324 + 353 = 1121 = 19 × 59

- The indices of 19 and 59 are 8 and 17 and 817 is the frequency of the initials A+L+M in sura 31.

Gaussian Mersenne Primes (GMP)

- The 19th GMP is $(1 + i)^{353} -1$

- The exponent of the 19th GMP is 353

- The number of frequencies of H + M in Sura 42 is 353

The permutation group Properties of 4253

- The 5324th Composite is 6123

- The 6123rd verse from beginning of the Quran is $96:19$

- Recall $96:19$ is the 19th verse revealed

Gaussian Composites

Index	Prime Index	Gaussian Composite
1	1	2
2	3	5
"	"	"
19	40	173
"	"	"
47	98	521
"	"	"
209	422	2917

209 is the total frequencies of A + S + Q in Sura 42. Note, A.S.Q. is mentioned in 42:2 (Hafs version only!). 2917 is the 11th permutation of 1279 and the 19th permutation of 1279 is 9127 and sura 9 has 127 verses. Note, 209 = 11 ×19!
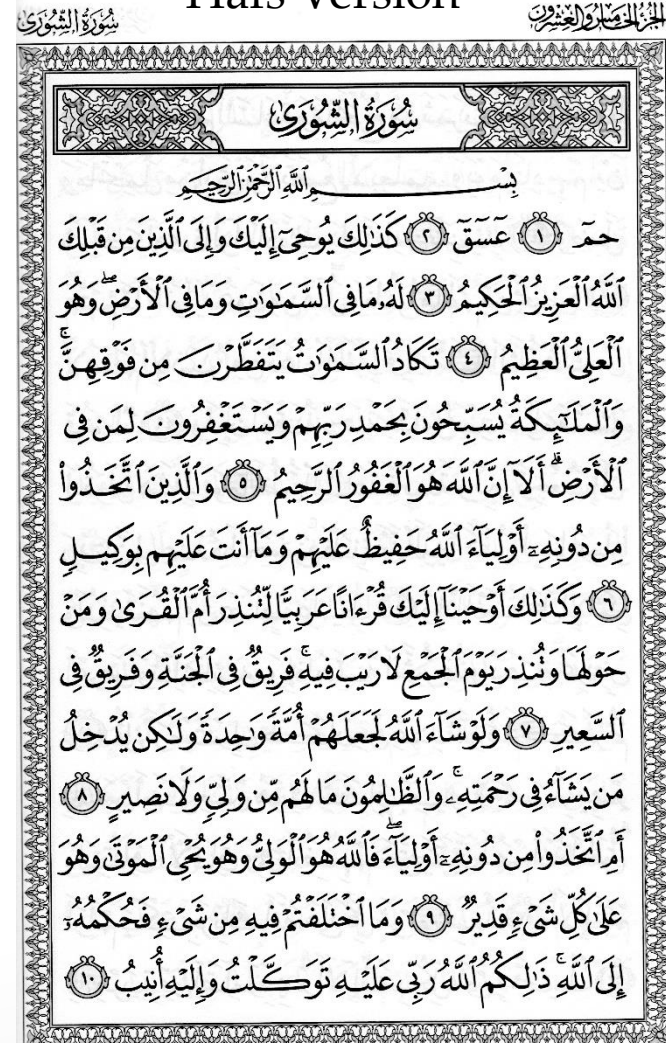
Gaussian Composites

209   422   2917

Warsh Version

Unknown

Hafs Version

Gaussian Composites

- 209 is the total frequencies of A + S + Q in Sura 42. Note, A.S.Q. is mentioned in 42:2 (Hafs version only!). Now we focus on indices 209 and 422 only.

- Note, 209 is the 68th semi-prime and 422 is 133rd semi-prime

- sura 68 has 133 "NuN"s!

Additive Primes

- The 19th additive prime is 139.

- 139 is the number of letters in Sura 1, the Opener.

- The 139th additive prime is 1657.

- $1657_{19} = 9127_{10}$

- Reciting the Opener in Arabic generates sura 9 with 127.

- The 1657th additive prime is 34253 and as a Gaussian Composite, its index is 1820.

- 1820 is the number of verses containing the word God in the entire Quran.

Lonely Primes

- The 1187th prime is 9619 and the first sura revealed, 96 has 19 verses.

- 1187 is the 114th lonely prime and the Quran has 114 suras or chapters.

- 9619 is the 790th lonely prime and

- $790_{19} = 2698_{10}$

- 2698 is the number of times the name of God, "Allah" is mentioned in the Quran

Generators

Index	Semi-Prime	Tri-Prime
19	55	78

- Chapter 55 has 78 verses
- 5519 is the index of composite 6346.
  Note the total number of verses including un-numbered "Bisme Allah's" is 6346.
- Verse 55:19 is the 1273rd prime-numbered verse from the beginning of the Quran
  and 1273 (= 19 × 67) is the number of words "Allah" from 1:1 to 9:127.
- 1955 is the 1657th composite
- $(1657)_{19} = (9127)_{10}$
- Therefore, in this manner the 19th semi-prime 55 generates sura 9 having 127 verses.
- 1955 = 5 × 17 × 23, where the indcies of these prime factors are 3,7,9. But 379th Lonely Gaussian prime is 9127

Generators, Super Primes

A Super Prime is a Prime whose index is a Prime

- 114th Super Prime is 4567

- The 19th permutation of 4567 is 7456

- Sura 74 has 56 verses

- Sura 74 us where number 19 is mentioned

Indexal Additive Primes

Rank	Index		Prime		Prime
19	98	+	521	=	619
114	808	+	6211	=	7019

- Sura *or Chapter* 19 has 98 verses.

- Note, 619 is the 114th prime number and the Quran has 114 suras.

- 114th Indexal Additive Prime is 7019 which is the sum of prime number 6211 and its index 808.

- Chapter 62 has 11 verses.

- 808th verse in the Quran is 6:19.

- 19 × 521 = 9899 is the frequency of initials A's + L's + M's in the 1st initialed sura *or chapter*, 2.

Quran

42:13 - He decreed for you the same religion that He decreed for Noah, and what We inspired to you is the same as what We decreed to Abraham, Moses, and Jesus; you shall uphold this religion, and do not be divided therein. Your call is heavy to bear for those who set up partners for god. God chooses for Himself whomever He wills and guides to Himself those who repent.

Conclusions

- According to the mathematics introduced in this talk, the Quran, and the scriptures in general, have always existed beyond the dimensions of this physical universe.

- Prime-Index Mathematics took the form of a book called the Quran, 1400 solar years ago.

- It can therefore be concluded that the Quran is the literal embodiment of the Prime-Index Mathematics and that it can only be authored by God.