Theory of Holistic Decomposition of Any Set of Any Natural Numbers as one or more Sets Each With Some Periodicity of The Number's Non Integral Prime Basis Position Number

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***Abstract*- In this research investigation, the author has detailed the Theory of Holistic Decomposition of Any Set of Any Natural Numbers as One or More Sets Each with Some Periodicity of the Number's Non Integral Prime Basis Position Number.**

Index Terms- Functional Analysis.

INTRODUCTION

The aforementioned Sets which form the Prime Trends are of much importance in Functional Analysis as it allows us to decompose data into Trends with unique Natural Periodicity.

THEORY (AUTHOR'S MODEL OF THEORY OF HOLISTIC DECOMPOSITION OF ANY SET OF GIVEN PRIMES AS ONE OR MORE SETS EACH WITH SOME PERIODICTY OF THE PRIME NUMBER'S BASIS POSITION NUMBER)

Say any Set S, is given all of whose elements belong to the Set of Natural Numbers. Let the Cardinality of the Set be n. Furthermore, these numbers are arranged in an ascending order.

We now write down each of its elements as sum of primes as detailed below:

Representation Of Any Natural Number As A Special Sum Of Primes

Note: Here we consider the following analysis for two cases, namely, a) 1 is the First Prime and b) 2 is the First Prime. In the second case if the following representation finally gives delta equal to 1, we can write it as (3-2)

We can note that any natural number 'q' can always be written as

$q = p_{\max 1} + \delta_1$ where $p_{\max 1}$ is the greatest Prime Number possible and which is less than s and

$\delta_1 = p_{\max 2} + \delta_2$ where $p_{\max 2}$ is the greatest Prime Number possible and which is less than δ_1 and

$\delta_2 = p_{\max 3} + \delta_3$ where $p_{\max 3}$ is the greatest Prime Number possible and which is less than δ_2 and

so on so forth until $\delta_h = 0$ for some positive integer h

Furthermore, we order the given set S as First order Elements Set (of the Sum Expression of the Elements of the Set S as detailed already, which is the set of first terms of the aforementioned sum expression of each element of S), Second Order Elements Set (of the Sum Expression of the Elements of the Set S as detailed already, which is the set of second terms of the aforementioned sum expression of each element of S), Third Order elements Set (of the Sum Expression of the Elements of the Set S as detailed already, which is the set of third terms of the aforementioned sum expression of each element of S), etc., to exhaustion. This notion of Order will be implicitly understood in *Example 2*.

Now if we represent the First Order Element Set of Numbers by ${}_1p_j$ then ${}_1S(1) = {}_1p_{j\min}$ and ${}_1S({}_1n) = {}_1p_{j\max}$.

Here, the index *j* represents the Prime Basis Position Number of the Prime p. For example, if 2 is considered as the first prime, then the Prime Basis Position Number of the Prime 2 is, of the Prime 3 is 2, of the Prime 5 is 3, of the Prime 7 is 4 and so on so forth.

We now create Subsets of First Order Element Set ${}_1S$ in a fashion such that ${}_1S_r = \left\{ {}_1p_{j\min + r_1 l_1} \right\}$ with $r_1 = 0,1,2,....,g$ and $l_1 = 0,1,2,....,\frac{({}_1n - 1)}{g_1}$ and $g_1 \leq \left(\frac{{}_1n - 1}{2} \right)$ for ${}_1n$ odd

and
$_1S_r = \{_1 p_{j\min + r_1 l_1}\}$

with $r_1 = 0,1,2,...., g$ and $l_1 = 0,1,2,...., \frac{(_1 n)}{g_1}$ and

$g_1 \le \left(\frac{_1 n}{2}\right)$ for $_1 n$ even.

A simple way to find these sets is detailed below using a method detailed below:

For the given set $_1 S$, we index the elements with their Prime Position Basis Numbers. Let this Set be $_1 J$. We now do Cartesian cross product of J with J i.e., we find $_1 J \times _1 J$. Now for these $_1 n^2$ number of ordered pairs (u,v), we find the absolute value of the difference $\delta_{(u,v)}$ between them. We now separately collect all the u, v's for $\delta_{(u,v)} = 1$, $\delta_{(u,v)} = 2$, $\delta_{(u,v)} = 3$,……., $\delta_{(u,v)} = \left(\frac{_1 n - 1}{2}\right)$ if $_1 n$ is odd or $\delta_{(u,v)} = \left(\frac{_1 n}{2}\right)$ if $_1 n$ is even and call them as a set each. The thusly gotten sets are the desired sets.

Once, we get the locations (Prime Metric Basis Positions Numbers Of The Primes of the given Set $_1 S$) of the thusly Decomposed Sets of the given Set $_1 S$, we can now write the Decomposed Sets of Set $_1 S$ in terms of the Primes representing their Prime Basis Position Numbers.

We now conduct similar analysis for all the rest of the Order Element Sets and finally add the individual components to get the desired Trends.

Example 1: When the elements of S are all Primes.
$S = \{3,5,7,13,29,31,53,61,67\}$

Then
$J = \{3,4,5,7,11,12,17,19.20\}$

Here, 1 is taken as the first Prime.

We now create a table of difference between u and v of the ordered pairs of J X J as shown

Table 1: *Table of difference between u and v of the ordered pairs of J X J*

	3	4	5	7	11	12	17	19	20
3	0	1	2	4	8	9	14	16	17
4	1	0	1	3	7	8	13	15	16
5	2	1	0	2	6	7	12	14	15
7	4	3	2	0	4	5	10	12	13
11	8	7	6	4	0	1	6	8	9
12	9	8	7	5	1	0	5	7	8
17	14	13	12	10	6	5	0	2	3
19	16	15	14	12	8	7	2	0	1
20	17	16	15	13	9	8	3	1	0

Needless to mention, the Set with u,v difference equal to 1 is the Set J itself. We now find all the pairs with u, v difference = 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17

Table 2: *Table of distilled Non Unique Prime Trends*

2	{3,5,7} {17,19}	
3	{4,7} {17,20}	
4	{3,7,11}	
5	{7,12,17}	
6	{5,11,17}	
7	{4,11} {5,12,19}	
8	{3,11,19} {4,12,20}	
9	{3,12} {11,20}	
10	{7,17}	
11	None	
12	{5,17} {7,19}	
13	{7,20} {4,17}	
14	{3,17} {5,19}	
15	{4,19} {5,20}	
16	{3,19} {4,20}	
17	{3,20}	

These Sets
{3,5,7} which is {3,7,13}
{17,19} which is {53,61}
{4,7} which is {5,13}
{17,20} which is {53,67}
{3,7,11} which is {3,13,29}
{7,12,17} which is {13,31,53}
{5,11,17} which is {7,29,53}
{4,11} which is {5,29}
{5,12,19} which is {7,31,61}
{3,11,19} which is {3,29,61}

{4,12,20} which is {5,31,67}
{3,12} which is {3,31}
{11,20} which is {29,67}
{7,17} which is {13,53}
{5,17} which is {7,53}
{7,19} which is {13,61}
{7,20} which is {13,67}
{4,17} which is {5,53}
{3,17} which is {3,53}
{5,19} which is {7,61}
{4,19} which is {5,61}
{5,20} which is {7,67}
{3,19} which is {3, 61}
{4,20} which is {5,67}
{3,20} which is {3,67}

can be called the Sets gotten by *Holistic Decomposition Of The Given Set S Of Primes As One Or More Sets Each With Some Periodicity Of The Prime Number's Basis Position Number*.

This set of Sets can also be called as the *Primality Tree Set* of the given Set S.

Example 2: When the elements of S are not all Primes.

$S = \{8,27,34\}$

$S = \{(7+1),(23+3+1),(31+3)\}$

Then ${}_1S = \{(7),(23),(31)\}$

${}_2S = \{(1),(3),(3)\}$

${}_3S = \{(0),(1),(0)\}$

Doing the Prime Trends Analysis on

${}_1S = \{(7),(23),(31)\}$

gives

$\{10,12\} \Rightarrow \{23,31\}$

$\{5,10\} \Rightarrow \{7,23\}$

$\{5,12\} \Rightarrow \{7,31\}$.

Similarly,

doing the Prime Trends Analysis on

${}_2S = \{(1),(3),(3)\}$

gives

$\{1,3\} \Rightarrow \{1,3\}$

$\{1,3\} \Rightarrow \{1,3\}$

Similarly,

doing the Prime Trends Analysis on

${}_3S = \{(0),(1),(0)\}$

gives

$\{0,1\} \Rightarrow \{0,1\}$

Now, using the Primes Sum expression carefully for each term of S, we sum the appropriate terms of the Component Prime Trends, to get the Composite Trends.

Note that the order of the sum is

7+1+0, 23+3+1, 31+3+0,

Therefore, a trend containing and starting with 7 will be added to trend containing and starting with 1 and then to the trend starting with and containing 0.

Similarly, a trend containing and starting with 23 will be added to trend containing and starting with 3 and then to the trend starting with and containing 1.

Similarly, a trend containing and starting with 31 will be added to trend containing and starting with 3 and then to the trend starting with and containing 0.

The size of the trends added must be the same and their terms getting added up should also satisfy the above 3 addition compatibility criterion. Only then we add such trends.

This gives us,

$\{27,34\} = \{(23+3+1),(31+3)\}$

$\{8,27\} = \{(7+1),(23+3+1)\}$

$\{8,34\} = \{(7+1),(31+3)\}$

which can be called as the Sets gotten by *Holistic Decomposition Of The Given Set Of Natural Numbers As One Or More Sets Each With Some Periodicity Of The Number's Prime Basis Position Number*.

This set of Sets can also be called as the *Primality Tree Set* of the Set S.

REFERENCES

[1] http://vixra.org/author/ramesh_chandra_bagadi

[2] http://philica.com/advancedsearch.php?author=12897

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