ON THE PARTICULAR DISTRIBUTION OF PRIME NUMBERS

On the particular distribution of prime numbers is a case to be treated in several parts. In the first place, I will treat the prime identity Δ, which is the method that allows one to discern with certainty prime numbers γ, of strong non-prime numbers ω, and non-prime numbers μ, amongst the series of natural wholes A, as in :

$$\omega, \mu, \Upsilon \subset A$$

The prime identity Δ, indicates the characteristics of prime numbers γ, of strong non-prime numbers ω, and non-prime numbers μ, in the following way :

1) A prime number γ, is a number which is divisible only by 1 and by itself Z, so that : $\Upsilon = Z$
2) A strong non-prime number ω, is a even multiple β, so that : $\omega = \beta$
3) A no-prime number $\mu_,$ is an odd multiple ξ.

The second step consists of analysing the natural wholes A, to have a standard idea of prime numbers Υ , and their distribution.

All numbers N containing any even unit Φ, no matter its size I will always be an even number II, as well as all numbers N, containing any odd unit M, whatever its size I, will always be an odd number π, because of the fact that the unit η contributes to determining the even nature Φ', or the odd nature M′ of a number N, so that : $N \subset \Phi = n \wedge N \subset M = \pi$.

The unit η, being a finite size serving as a base to measure other sizes I of same sort Γ. One can then spread all n numbers greater than 10, having as their unit η one of the following numbers : 0,2,4,6,or 8, as strong non-prime numbers ω, and all numbers greater than 10 having for their unit η one of the following numbers : 1,3,7 or 9 will be either non-prime numbers μ or prime numbers Υ. Because prime numbers Υ obey a precise rule of distribution which I am going to demonstrate.

First of all I begin by defining a test which will allow to know if a number N′ superior to 1 is prime or not, it is the identification test of prime numbers that take place in two stades :

- the first stade consist in dividing a number N′ by 3 and by 7, if the number N′ is divisible by 3, by 7 or by the two numerals, it is not prime, otherwise at this stade of the test it's possibly chances for numbers N′ to be prime.
- the second stade consist in confirming or invalidating the number the number N′ is prime or not, for that I need to define explicity the characteristics of numbers N′.

[Definitions of numbers N′] in accordance with convention, only the numbers N′ could to be submitted to the identification test of prime numbers. There are two types of numbers N′ (these are numbers N′, unequal to 10, they are all odd numbers π which are not multiple of 2, and the numbers N′ superior to 10, they are odd numbers π except multiples of 5). (we'll consider that the identification test of prime numbers "guarantee" that numbers N′ 3 and 7 are prime).

3 and 7 moreover being the smallest common dividers (SCS) of non-prime numbers μ, (indeed, the non-prime numbers μ, are odd multiples M^i, in that sense they are divisible). They does'nt always allow to "find" all non-prime numbers μ, (some numbers, are not divisible by 3 or 7, they are pseudo-prime numbers γ' - see the first stade of the identification test of prime numbers.)

The consequence, rules determining the identification test of prime numbers, just as the definition of numbers N', is that all strong non-prime numbers ω and all the multiples of 5 not being able to be prime number γ on no account, they are useless because they cannot be submitted to identification test of prime numbers
Because among others :

$$\omega = \alpha^p \times b^p \ \vee \ \alpha^p \times b^i$$

and :

$$M_5 = \alpha^p \times 5 \ \vee \ b^i \times 5$$

(or α^p, is an even number superior or equal to 2, b^p an other some even number superior or equal to 2, b^i an ODD number superior or equal to 3, M_5, a multiple of 5).

In this same way :

$$\begin{cases} P_3/3=F_1 \\ P_9/3=F_3 \\ P_1/3=F_7 \\ P_7/3=F_9 \end{cases} \quad \text{knowing that :} \quad \begin{cases} P_3>F_1 \\ P_9>F_3 \\ P_1<F_7 \\ P_7>F_9 \end{cases}$$

(where 3 and 7 are SCD)*

(note that 3 and 7 are also prime dividers)

Or :

$$\begin{cases} P_7/7=F_1 \\ P_1/7=F_3 \\ P_9/7=F_7 \\ P_3/7=F_9 \end{cases} \quad \text{knowing what :} \quad \begin{cases} P_7>F_1 \\ P_1>F_3 \\ P_9>F_7 \\ P_3>F_9 \end{cases}$$

But also :

$$\begin{cases} 3 \times F_1=P_3 \\ 3 \times F_3=P_9 \\ 3 \times F_3=P_1 \\ 3 \times F_9=P_7 \end{cases} \quad \text{or :} \quad \begin{cases} 7 \times F_1=P7 \\ 7 \times F_3=P1 \\ 7 \times F_9=P3 \\ 7 \times F_7=P9 \end{cases}$$

(where 3 and 7 are SCM)**

(Among the common dividers at two or several non-prime numbers ω, there are two among all which smaller than all the others, they are the smallest common dividers (SCS)*

(Among the common odd multipliers at two or several non-prime numbers ω, there are two which among all are smallest than all the others, they are smallest common multipliers (SCM)**

(The smallest common multipliers (SCM) non-prime numbers ω, can allow to find new non-prime numbers ω)

(Either F_1, is a number superior to 10 having like unit numeral 1, or F_3 is a number superior to 10 having like unit numeral 3, or F_7 is a number to 10 having like unit numeral 7, or F_9 is a number superior to 10 having like unit numeral 9, P_1 is a product having numeral 1 like unit, P_3 is a product having numeral 3 like unit, P_7 is a product having numeral 7 like unit, P_9 is a product having numeral 9 like unit)

- To know if a number N′, having get the 1st stade of the identification test of prime numbers is prime or not require use of the "magical key" which I call like this because it is at the root of the opening of a way between on the one hand a prime numbers γ "landscape" appearing so as uncertain, and on the other hand a another "landscape" where it seems that a concealed order is ruling as for their distribution among the natural wholes A.

FORMULA OF THE "MAGICAL KEY"

α) It is important to find the two multiplicative operations O_1 and O_3 wich by their respective products P must have the most weak gap possible with the number N′ having passed the first stade that is to say those being in front of and following e possible third multiplicative operation O_2, whose product P is supposed to be the number N′ having passed the first stade of the identification test of prime numbers, it can exist only if the number N′ in question is a non-prime numbers ω, otherwise there can only be two multiplicative operations O_1 and O_3, this imply that the number N′ having passed the first stade of the identification test of prime numbers, is really prime number Υ.

- Equations bell, I make explicit the required conditions to know if number N′ having passed the first stade of the identification test of prime numbers is prime or not.

  Case where the number N′ having passed the first stade of the identification test of prime numbers is a non-prime number ω.

Then :

$$\begin{cases} O_1 \Rightarrow M_A \text{ x } M_1 = P_1 \\ O_2 \Rightarrow M_A \text{ x } M_2 = P_2 \\ O_3 \Rightarrow M_A \text{ x } M_2 = P_3 \end{cases}$$

(let's note that for multiplicative) operations O_1, O_2 and O_3, M_A is identical.

As :

$$\begin{cases} M_1 < M_2 < M_3 \\ P_1 < P_2 < P_3 \\ P_1 \wedge P_3 = N_p \\ P_2 = \omega \\ \Delta \propto M_A \end{cases}$$

In the case where the number N′ having passed the first stade of the identification test of prime numbers, is a prime number Υ.

Then :

$$\begin{cases} O_1 \Rightarrow M_A \times M_1 = P_1 \\ O_3 \Rightarrow M_A \times M_3 = P_3 \end{cases}$$

(Let's note that for multiplicative O_1 and O_3, M_A is identical)

As :

$$\begin{cases} M_1 < M_3 \\ P_1 < P_3 \\ P_1 \wedge P_3 = N_P \\ \Delta \propto M_A \end{cases}$$

:

$$\begin{cases} N' \Leftrightarrow \Upsilon \\ P_1 < \Upsilon \\ O_3 > \Upsilon \end{cases}$$

:

$$\Lambda \begin{cases} \Upsilon - P_1 = 1 \\ P_3 - \Upsilon = 1 \end{cases}$$

(Either O_1, first multiplicative operation, or O_2 second multiplicative operation, or O_3 third multiplicative operation, or M_A multiplicande, or M_1 first multiplier, or M_2 second multiplier, or M_3 third multiplier, or P_1 first product, or P_2 second product, or P_3 third product, or Λ gap between products of multiplicative operation, or Λ gap between the number N' which passed the first stade of the identification test of prime numbers and the products)

For better understand this work, I will add the following sieves :

1) from 1 to 100
2) from 100 to 200
3) form 200 to 300
4) form 300 to 400
5) from 400 to 500
6) from 500 to 600
7) from 600 to 700
8) from 700 to 800
9) from 800 to 900
10) from 900 to 1000

(By convention so sieve will start with its original number)

(In general, all sieves contain 100 numbers N arranged according to the natural wholes)

(The circled numbers are prime)

1	**2**	**3**	4	**5**	6	**7**	8	9	10
11	12	**13**	14	15	16	**17**	18	**19**	20
21	22	**23**	24	25	26	27	28	**29**	30
31	32	33	34	35	36	**37**	38	39	40
41	42	**43**	44	45	46	**47**	48	49	50
51	52	**53**	54	55	56	57	58	**59**	60
61	62	63	64	65	66	**67**	68	69	70
71	72	**73**	74	75	76	77	78	**79**	80
81	82	**83**	84	85	86	87	88	**89**	90
91	92	93	94	95	96	**97**	98	99	100

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	277	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
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341	342	343	344	345	346	347	348	349	350
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371	372	373	374	375	376	377	378	379	380
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391	392	393	394	395	396	397	398	399	400

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471	472	473	474	475	476	477	478	479	480
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491	492	493	494	495	496	497	498	499	500

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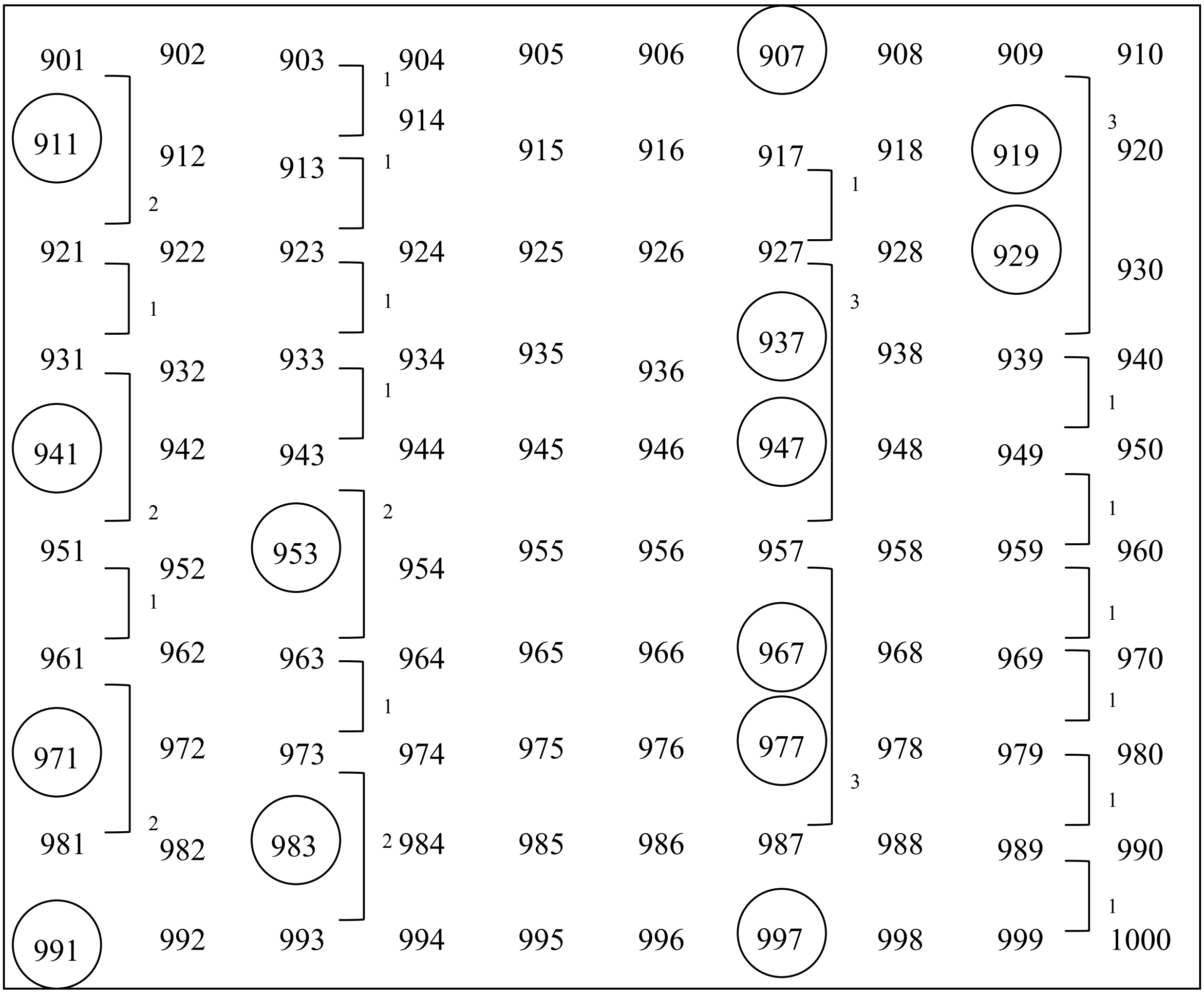
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600

601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
671	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900



To be able to study and analyse a sieve, we will class its numbers N (knowing it contains 100) in ten decimal series ε, arranged in ten columns F^x and ten series of n natural wholes A, arranged in ten lines F^y.

A decimal series ε, is a group E, composed of n numbers (where n numbers-where n = 10- each being greater than 10, having the same common unit χ (in exception with decimal series ε from 1 to 10 of sieve from 1 to 100.

And all being lined up in order from least to greatest, as in :

$$\varepsilon = (\alpha_x, b_x, c_x, \ldots, n_x)$$

(where α,b,c,…, n, are the numbers in the decimal series χ, X, the common unit of the numbers in the decimal serie).

A series of n natural wholes W, is a group E, composed of n numbers (where n = 10), which contain the same number N of even numbers n and the same numbers N of odd numbers π, such that : $W = n <=> \pi$. As well, the n number of a series of n natural wholes W, are arranges in increasing order.

One can notice that the presence of prime numbers Υ, is greater than in decimal series ε in relation to series of n natural wholes W, so that : $\Upsilon \subset \varepsilon > \Upsilon \subset W$
(see the sieves)

$$\left\{ \begin{array}{l} \pi_1 \subset \Upsilon_1 \\ (\pi \times 10) \\ \\ T = \frac{N_1}{\sqrt{N_2}} \end{array} \right. \quad \text{in relation to note that } N_1 <=> \Upsilon \quad \left\{ \begin{array}{l} \pi_2 \subset \Upsilon_2 \\ \\ (\pi \times 5) \\ T' = \frac{N_1}{\sqrt{N_2}} \end{array} \right.$$

(Where π_1, some ODD numbers of a decimal serie, Υ_1 some numbers of a decimal series π_2, some ODD numbers of a series of n natural wholes, N_1 are non-multiple odd numbers, N_2 are ODD multiples, T the number of prime numbers contained in a decimal series, T′ the number of prime numbers contained in a series of n natural wholes.

It is in this way, possible, by the sieves method and by identification test of prime numbers to know the distribution of prime numbers no matter what their size.

On can then from a number N, establish a sieve if the sieve contains only one hundred numbers N, composed in ten decimal series ε and in ten n natural wholes series W.

To understand the distribution of prime numbers Υ, it is necessary to analyse a decimal series ε, grasp the place prime numbers Υ occupy in this series, thanks to the introduction of a new concept which is the decimal difference B, this only reveals non-prime numbers μ of a decimal series ε, obtained thanks to the identification test of prime numbers which allows the evaluation of prime numbers Υ (number and distribution in a decimal series ε) respecting the decimal difference B between each non-prime numbers μ of a decimal series ε, (that is to say, calculating the number of numbers N separating non-prime numbers μ from one another, as in : $\mu\text{-}\mu => \mu \neq \mu$

(Were μ is a non-prime number, μ' a another non-prime number, D the difference)

In other words, the n numbers which separate a non-prime number μ from another gives a difference D and are counted in a decimal form L (where L=10), which permits the attribution for each difference D A n number of decimal L equal to A n number R, so that : $L <=> R$ (see the sieves).

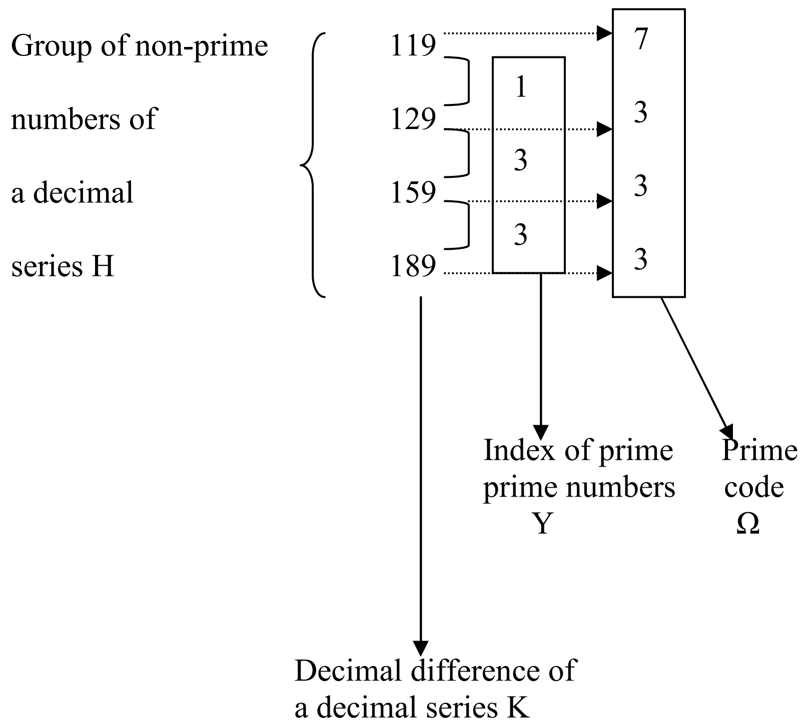
The decimal differences B are represented by the traces (of the braces) represented in each sieve. They permit one two distinguish the non-prime numbers μ from prime numbers Υ from a decimal series ε, recognising them and indicating their position.

An index of prime numbers ϒ, is a group E composed of n numbers R corresponding to n decimal differences B of a decimal series ε, in other words, an index of prime numbers ϒ and the decimal differences of a decimal series K are of the same sort of order, such that :
$f\ (Y) \leq f\ (K)$

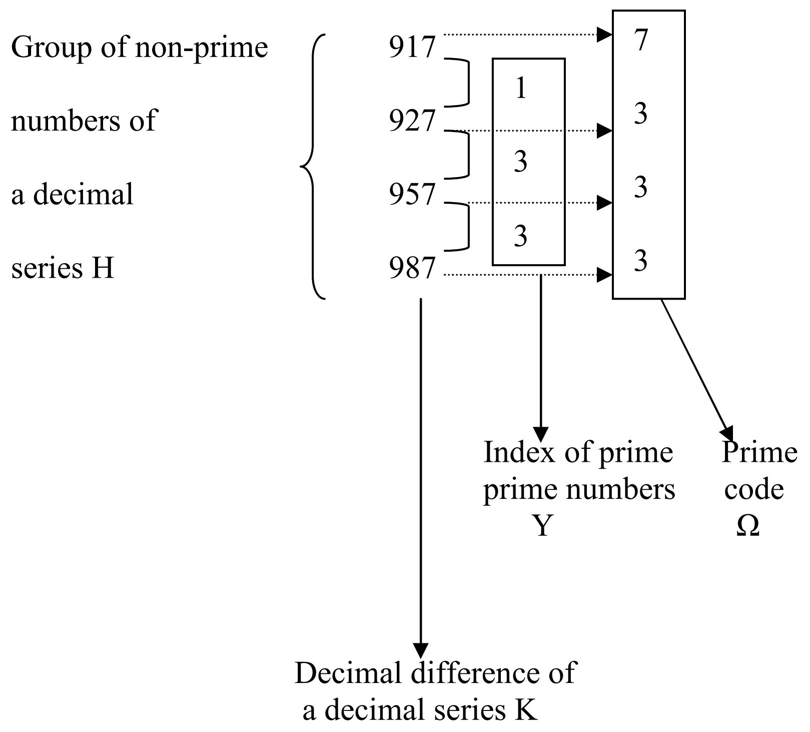
We also note the existence of prime codes Ω, a prime code Ω, is a group E composed of n prime dividers Ξ (in this case 3 and 7) corresponding to n non-prime numbers μ of a decimal series ε* is equiotent to the prime code Ω which corresponds.

* (a group of non-prime numbers of a decimal series H, is an under-group S^E, composed of non-prime numbers μ of a decimal series ε, such that : $H \subseteq \varepsilon$).

EXAMPLE OF CONFIGURATIONS F SIEVE 100 TO 200



SIEVE 900 TO 1000



When two or more decimal series ε have the same index of prime numbers Y (there fore the same prime codes Ω) it is said they have the same configuration F. One may notice that there exists several types of index of prime numbers Y, (see the sieve) because the diversity of index of prime numbers , depend on the distribution of prime numbers ϒ and non-prime numbers μ in each decimal series ε.

One can then says that : $\sum = 0$

(where ∑, is the diversity of index of prime numbers of a sieve, 0 the diversity of distribution of prime numbers and non-prime numbers in each decimal series of the same sieve).

Each time that we will have recourse to second stade of the identification test of prime numbers, and only when we will find non-prime numbers μ which are not divisible by 3 or by 7, we will note by the greek letter in the prime code Ω, for symbolizing this action (instead of numerals).

THE LAW ON TNE INVARIABILITY OF THE RULES USED TO RECOGNIZE A PRIME NUMBER OF WHATEVER SIZE.

A prime number, on any n size always obey the same rule to satisfy identification test of prime numbers wheter it is n times smaller or n times larger than another know prime number.