MERGING THE GOLDBACH AND THE BUNYAKOVSKY CONJECTURE INTO A UNIFIED SECOND ORDER PRIME AXIOM AND INVESTIGATING MUCH BEYOND THE GOLDBACH CONJECTURE AND THE PRIME NUMBER THEOREM.

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Abstract. Merging the Goldbach and the Bunyakovsky conjecture into a Unified second order Prime Axiom and investigating much beyond the Goldbach conjecture and the prime number theorem.

1. Unified second order Prime Axiom

Merging the Goldbach and the Bunyakovsky conjecture into a Unified second order Prime Axiom relying on the assumption of the perfect randomness of the arbitrary large prime k-tuple numbers :

Definition : A sequence $S_X = ((1, X_1), (2, X_2), ... (N, X_N), ...)$ is a Z-sequence if and only if the sequence S_X is recursively computable by an algorithm and the values of the sequence S_X contain an arbitrary large number of different primes.

Unified Axiom 01 : The merging of N different Z-sequences contain an arbitrary large number of N-tuple containing N elements that are prime k-tuple with their indexes being also prime k-tuple numbers.

Unified Axiom 02 : Let be a function f being a 2-dimensional function such that $g(n) = f(n, b)$ is a Z-function for almost all prime values of the argument b, and such that $h(n) = f(a, n)$ is a Z-function for almost all prime values of the argument a.

The sequence $f(X(n), Y(n))$ is a Z-sequence if X and Y are both Z-sequences such that

$$\nexists \alpha \forall (n > N_0) X(n) = \alpha Y(n)$$

and

$$\lim_{n \to +\infty} X(n)/Y(n) \neq 1.$$

Unified Axiom 03 : Let be the function f being a 2-dimensional function such that $g(n) = f(n, b)$ is a Z-function for almost all prime values of the argument b, and such that $h(n) = f(a, n)$ is a Z-function for almost all prime values of the argument

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Let be the sequences X and Y being both Z-sequences. Then, there is only a finite number of values N such that $f(N - X(b), Y(b))$ is not a prime k-tuple for any prime k-tuple values of b.

Comments : The Goldbach conjecture, the Dubner conjecture and the Full Zaganidis conjecture (see below) are included inside the Unified Axiom 03. By using recursively the Unified Axiom 02 from the initial Dirichlet's theorem on arithmetic progressions, the Bunyakovsky conjecture is included inside the Unified Axiom 02. The generalized Bunyakovsky conjecture is included inside the Unified Axiom 01.

2. Beyondness Goldbach conjecture

There is 3 670 counter examples (0 and 2 included) of the Goldbach conjecture extended to the prime triplets (the Goldbach conjecture has 2 counter examples as 0 and 2, and the Dubner conjecture has 36 counter examples including 0 and 2).

The plot of the 3 670 counter examples of the Goldbach conjecture extended to the prime triplet numbers, shows a smooth logarithm divergence between 0 and $7\ 400\ 384 = 2^6 \times 115631$ driven by the perfect randomness of the arbitrary large prime triplet numbers.

The plot of the 36 counter examples of the Goldbach conjecture extended to the prime doublet numbers, does not show a smooth logarithm divergence between 0 and $4\ 208 = 2^4 \times 363$ driven by the perfect randomness of the arbitrary large prime doublet numbers.

Both numbers 4 208 and 7 400 384 can not be written as THREE squares.

The plot of the 40 382 counter examples of the Goldbach conjecture extended to the sum of a prime doublet and a left prime triplet, roughly shows a smooth logarithm divergence between 0 and $40\ 382 = 2 \times 61 \times 331$ driven by the perfect randomness of the arbitrary large prime doublet & left triplet numbers.

The plot of the 40 384 counter examples of the Goldbach conjecture extended to the sum of a prime doublet and a center prime triplet, roughly shows a smooth logarithm divergence between 0 and $40\ 384 = 2^6 \times 631$ driven by the perfect randomness of the arbitrary large prime doublet & center triplet numbers.

The plot of the 40 388 counter examples of the Goldbach conjecture extended to the sum of a prime doublet and a right prime triplet, roughly shows a smooth logarithm divergence between 0 and $40\ 388 = 2^2 \times 23 \times 439$ driven by the perfect randomness of the arbitrary large prime doublet & right triplet numbers.

The Full Zaganidis Conjecture : every even number strictly greater than 2, 4, 6, 62, 68, 788, 908, 4 208, 40 382, 40 384, 40 388 and 7 400 384 is the sum of a P+P, P+D, P+T, P+LT, P+RT, D+T, P+CT, D+D, D+LT, D+CT, D+RT, T+T (P

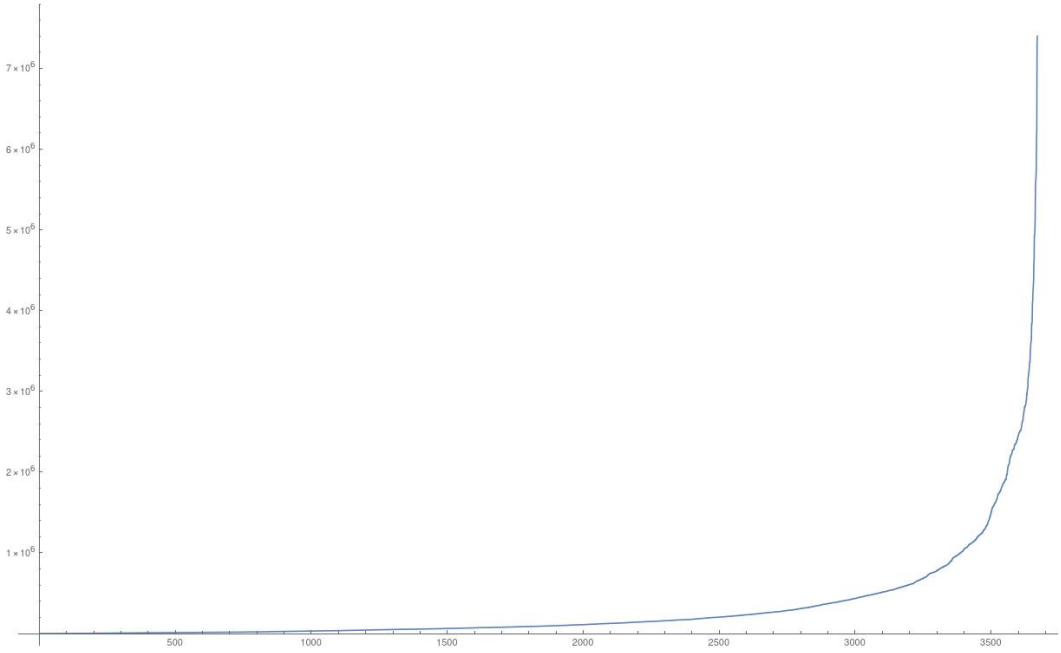

FIGURE 1. Goldbach conjecture extended to the prime triplets. The abscissa is the n-th counter example and the ordinate is its value.

= Prime number, D = Prime Doublet, T= Prime Triplet, LT = Left Prime Triplet , CT = Center Prime Triplet, RT = Triplet Prime Right).

The Full Zaganidis Conjecture : every even number is the sum of a P+P, P+D, P+T, P+LT, P+RT, D+T, P+CT, D+D, D+LT, D+CT, D+RT, T+T except for 2, 3, 4, 5, 8, 6, 6, 36, 121, 135, 124 and 3 670 counter-examples. (P = Prime number, D = Prime Doublet, T= Prime Triplet, LT = Left Prime Triplet , CT = Center Prime Triplet, RT = Triplet Prime Right).

Since the left prime doublets (left prime twins or LD) are congruent 5 modulo 6 and the right prime doublets (right prime twins or RD) are congruent 1 modulo 6, there are an infinite number of counter-examples for the following prime conjectures : P+LD and P+RD. The asymptotic density of the counter-examples is 1/6. The none-asymptomatic density of the counter-examples is strictly lower than 1/6 since the even numbers of the form $3 + LD$ and $3 + RD$ have a vanishing asymptomatic density.

A much more detailed Goldbach conjecture can be done about the total number of prime couples for every even number being the sum of a P+P :

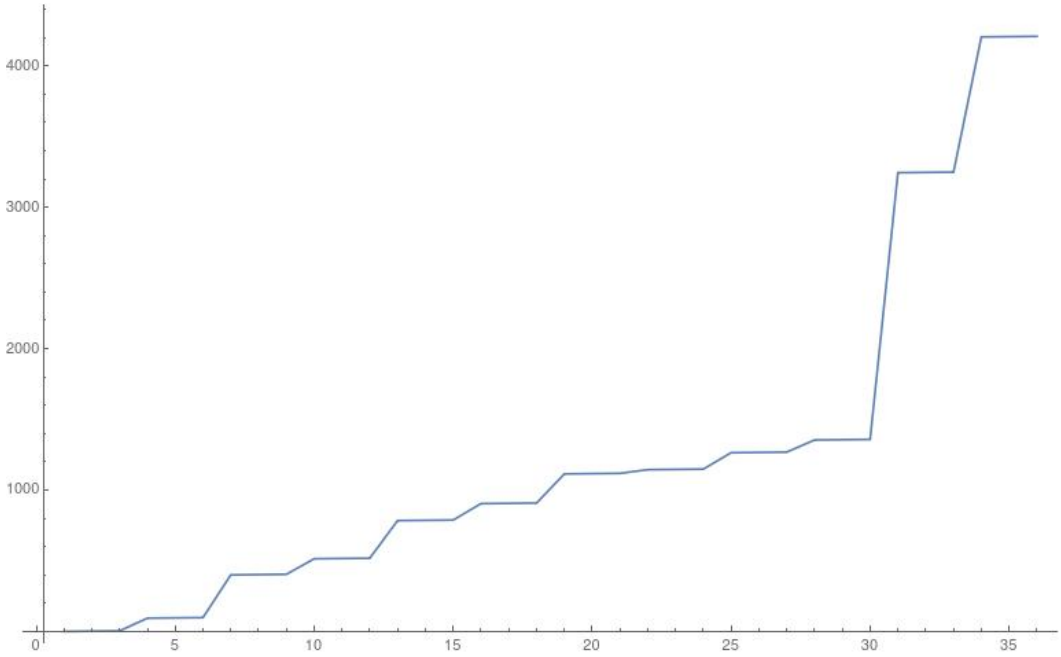

FIGURE 2. Goldbach conjecture extended to the prime doublets (Dubner Conjecture). The abscissa is the n-th counter example and the ordinate is its value.

$$X_{\#(Goldbach)}(N) = \#\{(p1, p2) : 2N = p1 + p2\} \tag{1}$$

$$\lim_{n \to N} \inf_{M > N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} = \frac{2}{3} \tag{2}$$

$$\lim_{n \to N} \sup_{M > N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} = \frac{\pi}{4} \tag{3}$$

$$\forall N \inf_{M > N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} < \frac{2}{3} \tag{4}$$

$$\forall N \sup_{M > N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} < \frac{\pi}{4} \tag{5}$$

(6)

The asymptotic behavior of the prime-counting function $\pi(x)$ of the prime numbers can be describe much more accurately with the following advanced formula:

(7)

$$\pi(x) = Li(x) - Li(2) - \frac{1}{8} Log(n)^{Log(2)\sqrt{Log(n)}} + \frac{1}{8} Log(2)^{Log(2)^{3/2}} + 1 + \delta\pi(x)$$

(8)

$$\Delta\pi(x) = \pi(x) - Li(x) + Li(2) + \frac{1}{8} Log(n)^{Log(2)\sqrt{Log(n)}} - \frac{1}{8} Log(2)^{Log(2)^{3/2}} - 1$$

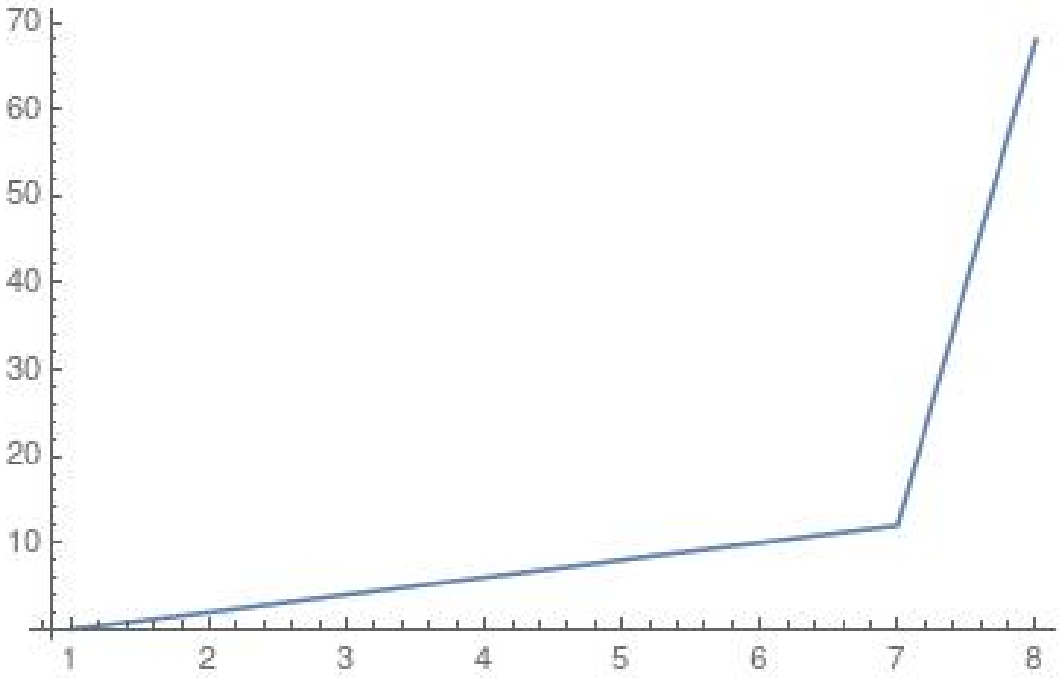

FIGURE 3. Goldbach conjecture extended to the sum of a prime and a right prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

By taking the following interval $x \in \left[10^{10}, 10^{10} + 10^4\right]$, the standard deviation of the increment of the prime-counting function is

$$VAR\left(NextPrime\left(Prime\left(\pi\left(x\right)\right)\right) - Prime\left(\pi\left(x\right)\right)\right) = 42.964$$

while the mean of the increment of the prime-counting function is

$$\left\langle NextPrime\left(Prime\left(\pi\left(x\right)\right)\right) - Prime\left(\pi\left(x\right)\right)\right\rangle = 54.5171.$$

Therefore, we should expect the following values for the asymptotic distribution error function $\Delta\pi\left(x\right)$:

(9)

$$\Delta\pi\left(N = 10^{10}\right) \sim \sqrt{\frac{N \times VAR\left(NextPrime\left(Prime\left(\pi\left(x\right)\right)\right) - Prime\left(\pi\left(x\right)\right)\right)}{2}} = 1.78718 \times 10^7$$

It points out to the following Prime Paradox, the perfect randomness of the arbitrary large prime numbers is too perfect and too close to the advanced asymptotic prime-counting error function since its deviation is only few thousands about instead of an expected deviation of few millions about.

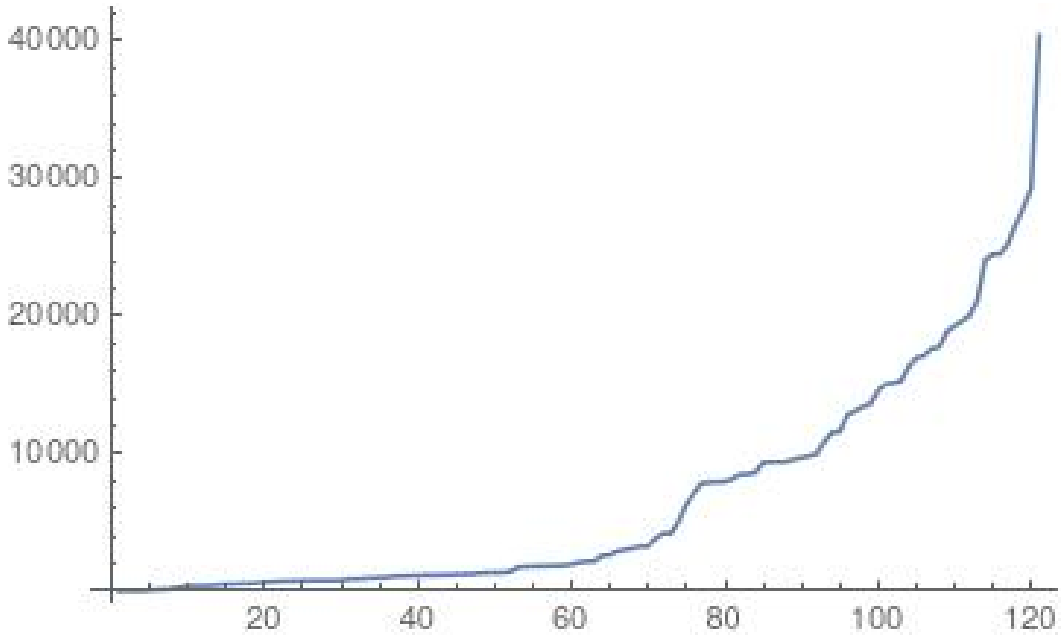

FIGURE 4. Goldbach conjecture extended to the sum of a prime doublet and a right prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

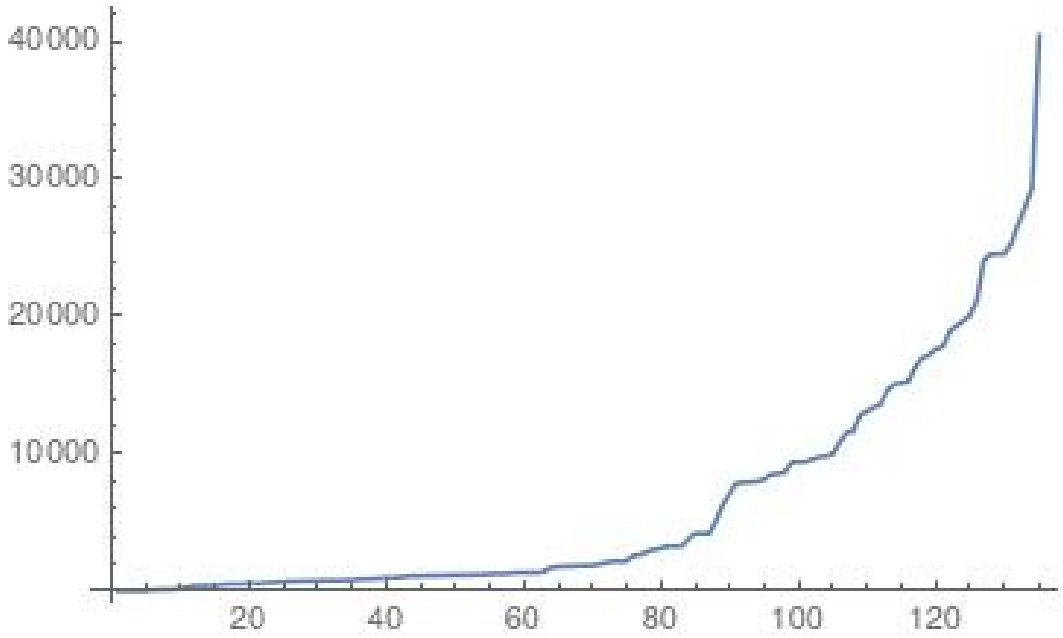

FIGURE 5. Goldbach conjecture extended to the sum of a prime doublet and a left prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

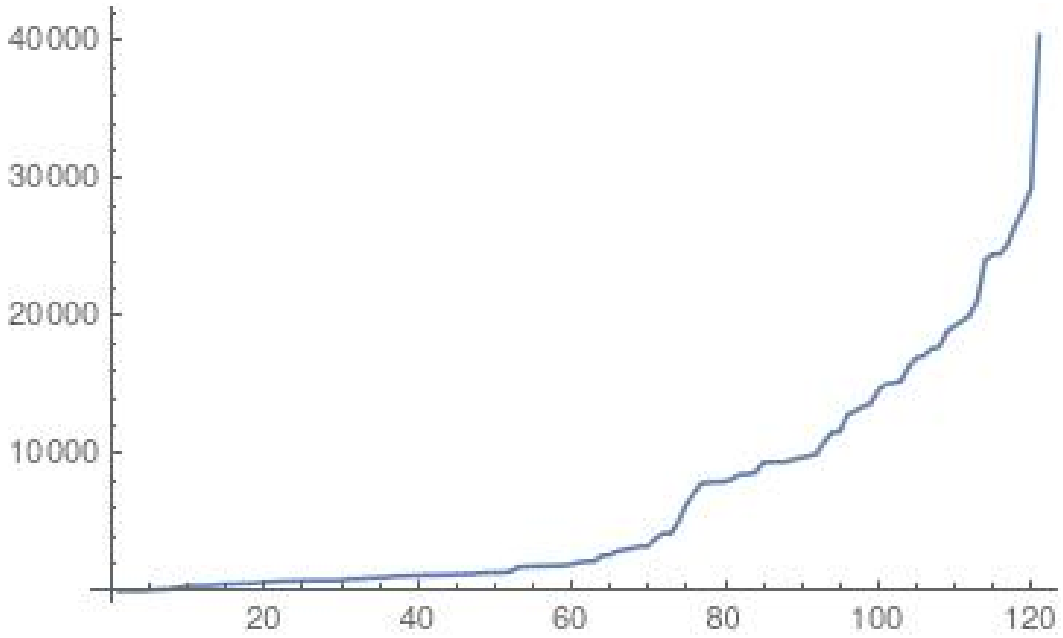

FIGURE 6. Goldbach conjecture extended to the sum of a prime doublet and a center prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

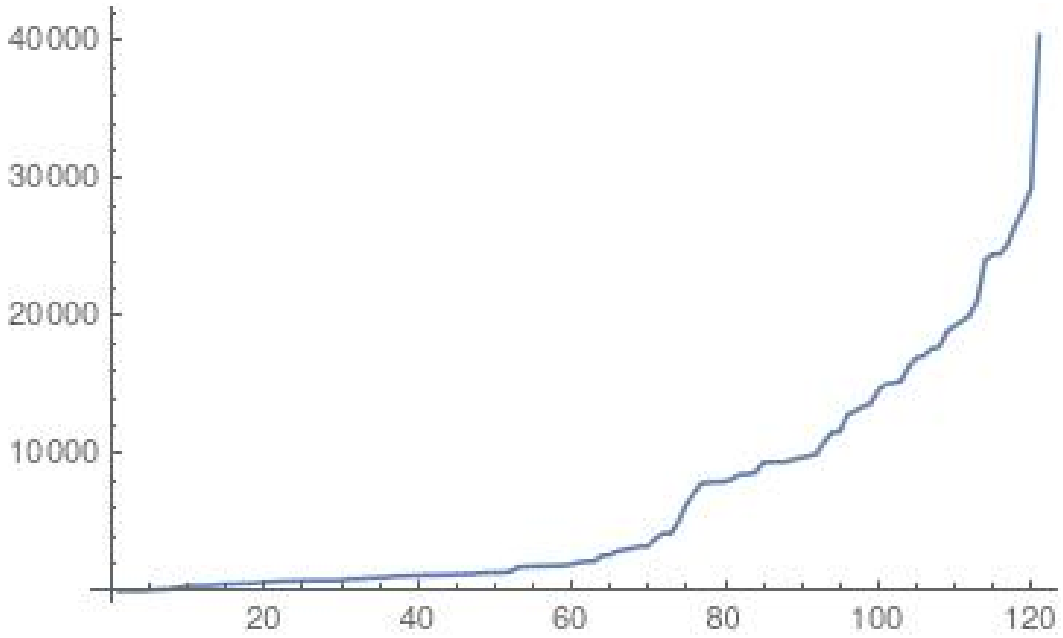

FIGURE 7. Goldbach conjecture extended to the sum of a prime doublet and a right prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

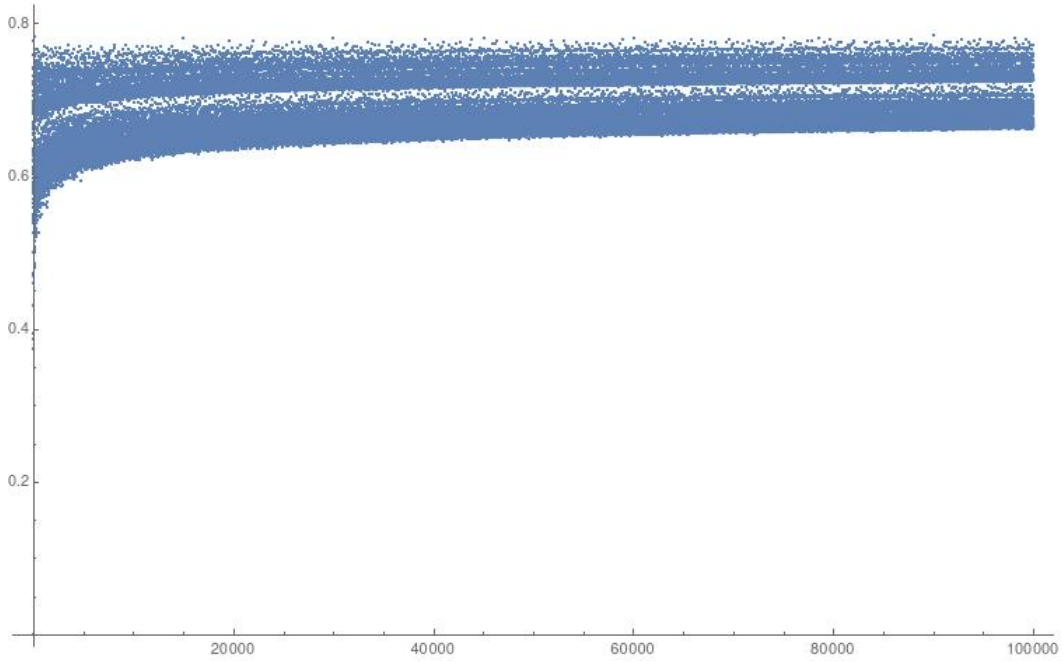

FIGURE 8. Plot of the Sequence $X_{\#(Goldbach)}(N)$.

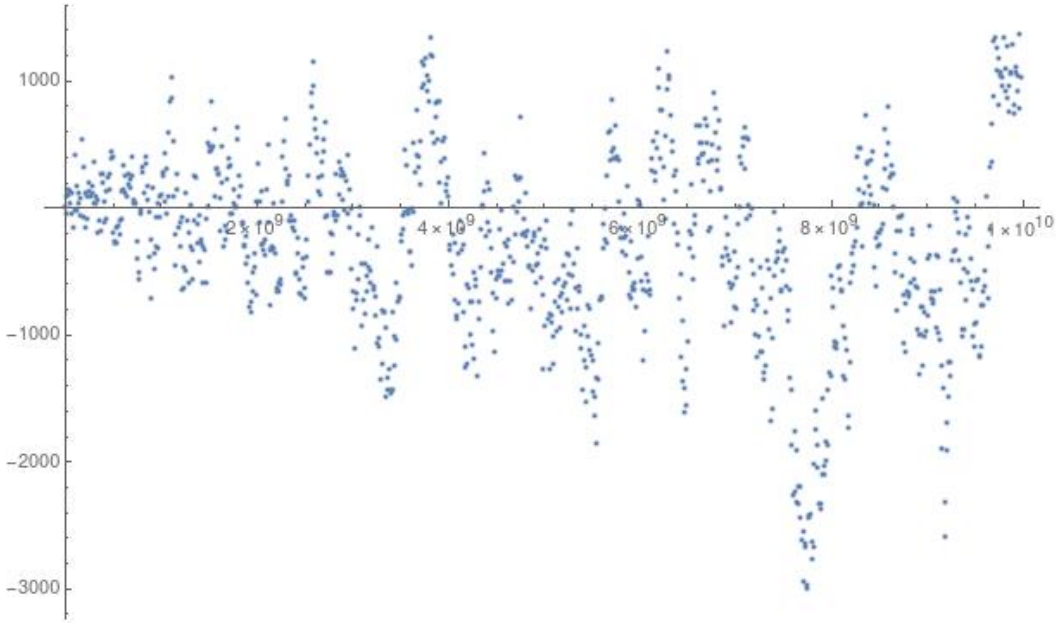

FIGURE 9. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^{10} using steps equal to 10^7.

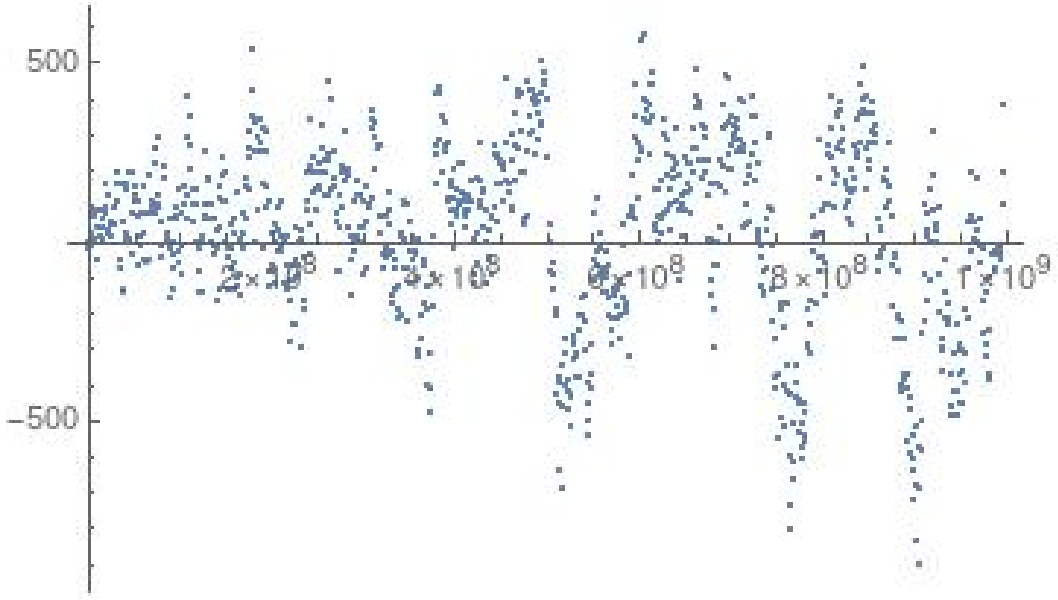

FIGURE 10. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^9 using steps equal to 10^6.

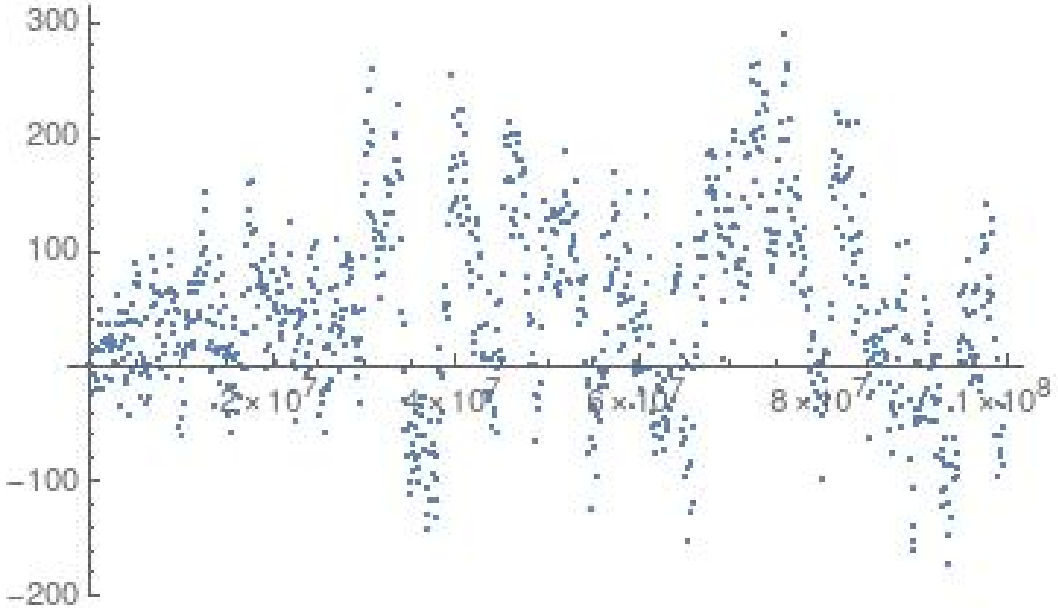

FIGURE 11. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^8 using steps equal to 10^6.

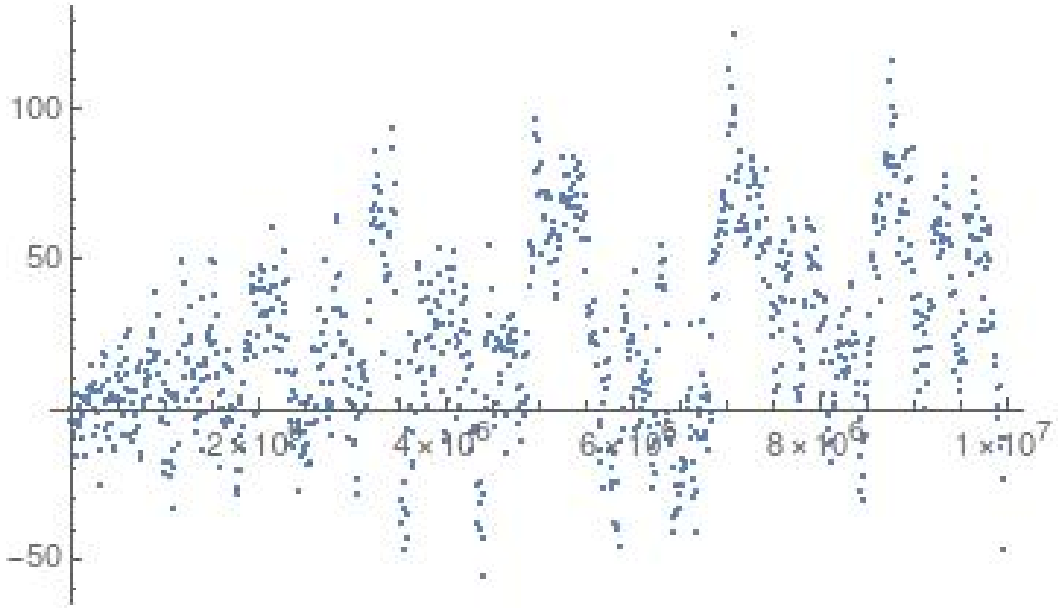

FIGURE 12. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^7 using steps equal to 10^4.

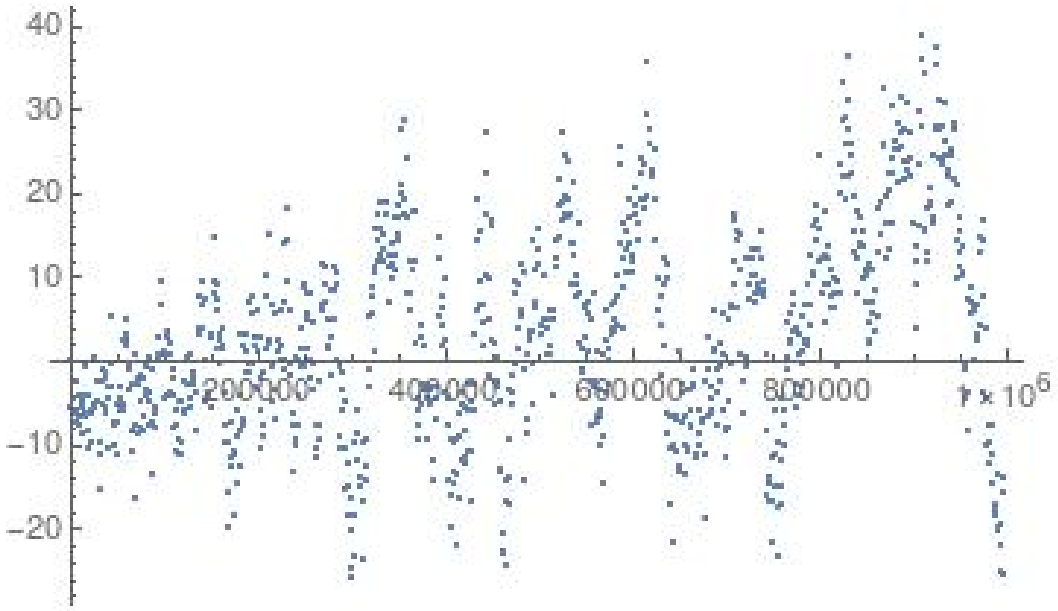

FIGURE 13. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^6 using steps equal to 10^3.

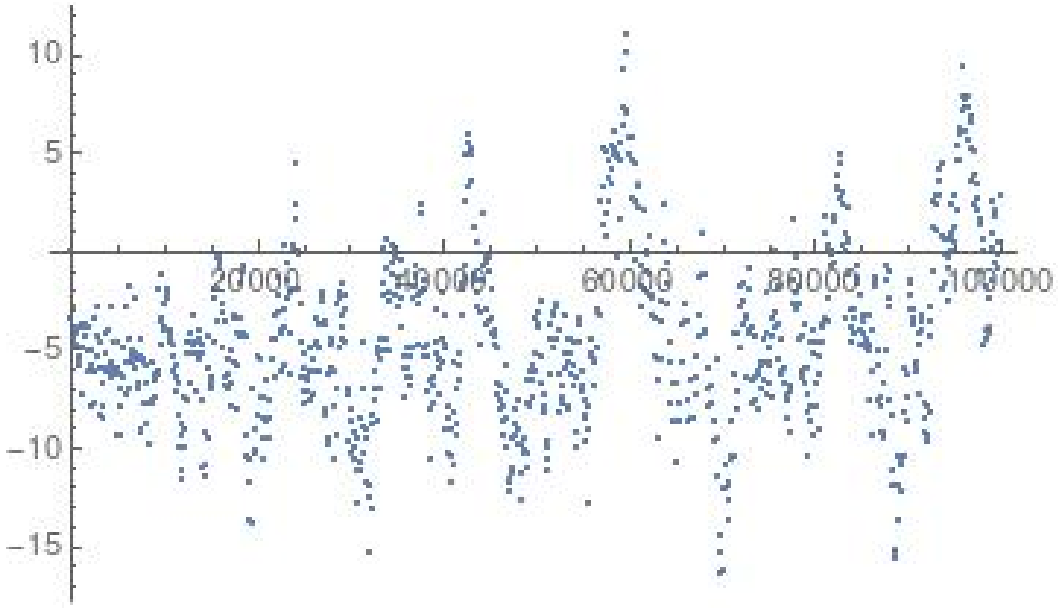

FIGURE 14. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^5 using steps equal to 10^2.

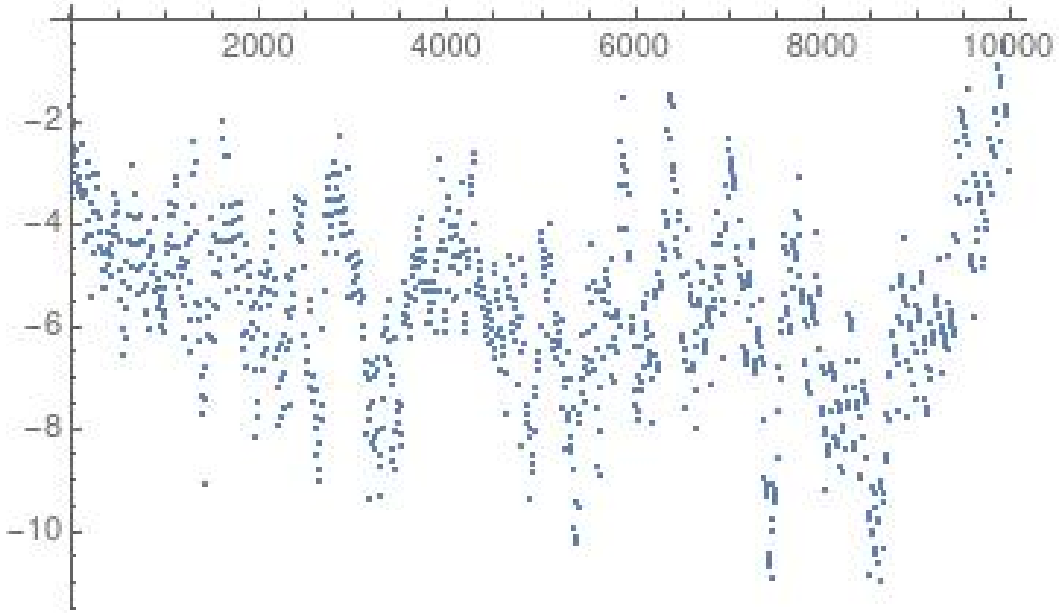

FIGURE 15. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^4 using steps equal to 10^1.

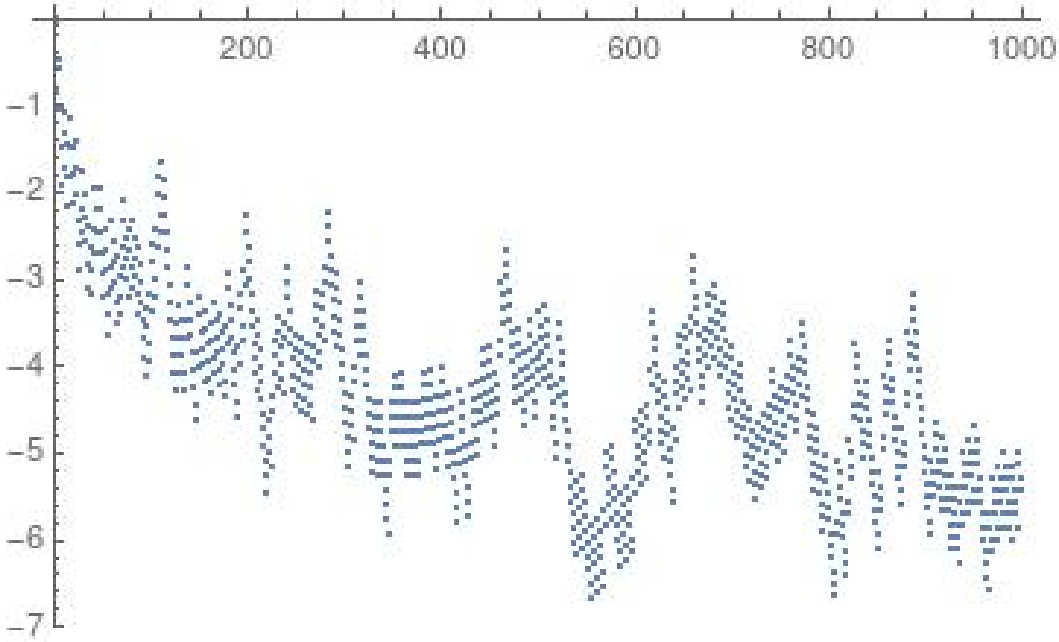

FIGURE 16. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^3 using steps equal to 10^0.

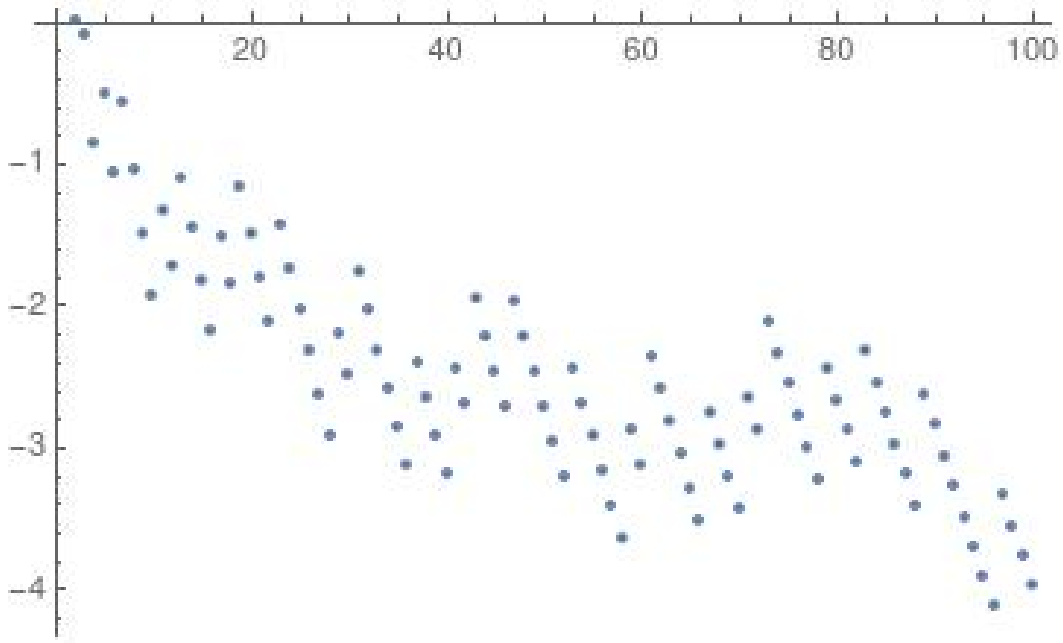

FIGURE 17. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^2 using steps equal to 10^0.

References

[1] A. Zaganidis, "Mathematica Notebooks, Pictures and Source Files : Merging the Goldbach and the Bunyakovsky Conjecture into a Unified Second Order Prime Axiom and Investigating Much Beyond the Goldbach Conjecture and the Prime Number Theorem.." https://drive.google.com/drive/folders/1J7_12IMoRCS5WzBxy7oMNfKZpA_6o-S_?usp=sharing.

[2] Wikipedia. https://en.wikipedia.org/wiki/Sequent_calculus.

[3] Wikipedia. https://en.wikipedia.org/wiki/Axiom.

[4] Wikipedia. https://en.wikipedia.org/wiki/Randomness.

[5] Wikipedia. https://en.wikipedia.org/wiki/Goldbach%27s_conjecture.

[6] Wikipedia. https://en.wikipedia.org/wiki/Harvey_Dubner.

[7] Wikipedia. https://en.wikipedia.org/wiki/Dirichlet%27s_theorem_on_arithmetic_progressions.

[8] Wikipedia. https://en.wikipedia.org/wiki/Bunyakovsky_conjecture.

[9] Wikipedia. https://en.wikipedia.org/wiki/Schinzel%27s_hypothesis_H.

[10] Wikipedia. https://en.wikipedia.org/wiki/Prime_k-tuple.

[11] Wikipedia. https://en.wikipedia.org/wiki/Almost_prime.

[12] Wikipedia. https://en.wikipedia.org/wiki/Congruence.

[13] Wikipedia. https://en.wikipedia.org/wiki/Sequence.

[14] Wikipedia. https://en.wikipedia.org/wiki/Limit_inferior_and_limit_superior.

[15] Wikipedia. https://en.wikipedia.org/wiki/Chen's_theorem.

[16] Wikipedia. https://en.wikipedia.org/wiki/Chen_Jingrun.

[17] T. Yamada, "Explicit chen's theorem," 2015.

[18] Wikipedia. https://en.wikipedia.org/wiki/Prime_number_theorem.

[19] Wikipedia. https://en.wikipedia.org/wiki/Prime-counting_function.

[20] Wikipedia. https://en.wikipedia.org/wiki/Asymptotic_analysis.

[21] Wikipedia. https://en.wikipedia.org/wiki/Random_walk.

[22] Wikipedia. https://en.wikipedia.org/wiki/Variance.

[23] Wikipedia. https://en.wikipedia.org/wiki/Mean.

3. Appendixes

The 2 counter examples (0 and 2 included) of the Goldbach conjecture : $\{0, 2\}$.

The 3 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a prime doublet: $\{0, 2, 4\}$.

The 4 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a prime triplet: $\{0, 2, 4, 6\}$.

The 5 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a left prime triplet: $\{0, 2, 4, 6, 62\}$.

The 8 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a right prime triplet: $\{0, 2, 4, 6, 8, 10, 12, 68\}$.

The 6 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime doublet and a prime triplet: $\{0, 2, 4, 6, 400, 788\}$.

The 6 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a center prime triplet: $\{0, 2, 4, 6, 8, 908\}$.

The 36 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime doublet and a prime doublet:

$$\{0, 2, 4, 94, 96, 98, 400, 402, 404, 514, 516, 518, 784, 786, 788,$$
$$904, 906, 908, 1114, 1116, 1118, 1144, 1146, 1148, 1264, 1266, 1268,$$
$$1354, 1356, 1358, 3244, 3246, 3248, 4204, 4206, 4208\}$$

The 121 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a left prime triplet :

$$\{0, 2, 4, 6, 62, 92, 94, 182, 272, 394, 396, 398, 400, 482, 512, 514,$$
$$554, 556, 602, 662, 692, 734, 736, 754, 776, 782, 784, 786, 788, 802,$$
$$902, 904, 944, 976, 998, 1010, 1112, 1114, 1142, 1144, 1178, 1180,$$
$$1186, 1208, 1216, 1262, 1264, 1322, 1352, 1354, 1364, 1412, 1742,$$
$$1784, 1808, 1816, 1838, 1850, 1864, 1952, 2074, 2162, 2164, 2582,$$
$$2624, 2872, 3002, 3082, 3242, 3244, 3842, 4202, 4204, 5102, 6362,$$
$$7114, 7832, 7910, 7928, 7970, 8122, 8462, 8504, 8594, 9370, 9400,$$
$$9402, 9404, 9602, 9722, 9844, 9974, 10850, 11510, 11582, 12814,$$
$$13082, 13400, 13612, 14594, 15040, 15124, 15260, 16312, 16954, 17102,$$
$$17560, 17744, 18890, 19298, 19634, 20012, 21104, 24094, 24530, 24532,$$
$$25216, 26648, 27908, 29294, 40382\}$$

The 135 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a center prime triplet :

$$\{0, 2, 4, 6, 8, 64, 94, 96, 98, 184, 274, 398, 400, 402, 404, 484,$$
$$514, 516, 518, 556, 558, 560, 604, 664, 694, 736, 738, 740, 758, 778,$$
$$784, 786, 788, 790, 806, 904, 906, 908, 946, 980, 1000, 1012, 1114,$$
$$1116, 1118, 1144, 1146, 1148, 1180, 1182, 1184, 1190, 1210, 1220,$$
$$1264, 1266, 1268, 1324, 1354, 1356, 1358, 1366, 1414, 1744, 1786,$$
$$1810, 1820, 1840, 1852, 1868, 1954, 2078, 2164, 2166, 2168, 2584,$$
$$2626, 2876, 3004, 3086, 3244, 3246, 3248, 3844, 4204, 4206, 4208,$$
$$5104, 6364, 7118, 7834, 7912, 7930, 7972, 8126, 8464, 8506, 8596,$$
$$9374, 9404, 9406, 9604, 9724, 9848, 9976, 10852, 11512, 11584, 12818,$$
$$13084, 13402, 13616, 14596, 15044, 15128, 15262, 16316, 16958, 17104,$$
$$17564, 17746, 18892, 19300, 19636, 20014, 21106, 24098, 24532, 24534,$$
$$24536, 25220, 26650, 27910, 29296, 40384\}$$

The 124 counter examples (0 and 2 included) of the Goldbach conjecture extended to the sum of a prime and a right prime triplet :

$$\{0, 2, 4, 6, 8, 10, 12, 68, 98, 100, 188, 278, 400, 402, 404, 406,$$
$$488, 518, 520, 560, 562, 608, 668, 698, 740, 742, 760, 782, 788, 790,$$
$$792, 794, 808, 908, 910, 950, 982, 1004, 1016, 1118, 1120, 1148,$$
$$1150, 1184, 1186, 1192, 1214, 1222, 1268, 1270, 1328, 1358, 1360,$$
$$1370, 1418, 1748, 1790, 1814, 1822, 1844, 1856, 1870, 1958, 2080,$$
$$2168, 2170, 2588, 2630, 2878, 3008, 3088, 3248, 3250, 3848, 4208,$$
$$4210, 5108, 6368, 7120, 7838, 7916, 7934, 7976, 8128, 8468, 8510,$$
$$8600, 9376, 9406, 9408, 9410, 9608, 9728, 9850, 9980, 10856, 11516,$$
$$11588, 12820, 13088, 13406, 13618, 14600, 15046, 15130, 15266, 16318,$$
$$16960, 17108, 17566, 17750, 18896, 19304, 19640, 20018, 21110, 24100,$$
$$24536, 24538, 25222, 26654, 27914, 29300, 40388\}$$

The 3 670 counter examples (0 and 2 included) of the Goldbach conjecture extended to the prime triplets :

$$
\begin{aligned}
(47)\quad & \{0, 2, 4, 6, 8, 68, 98, 100, 158, 162, 166, 188, 190, 192, 224, 254,\\
(48)\quad & 278, 402, 406, 434, 436, 438, 440, 442, 488, 492, 496, 518, 520, 522,\\
(49)\quad & 526, 556, 602, 604, 606, 608, 610, 612, 616, 644, 668, 672, 674, 676,\\
(50)\quad & 704, 736, 758, 762, 766, 782, 786, 788, 790, 792, 794, 796, 798, 800,\\
(51)\quad & 802, 822, 824, 854, 856, 908, 912, 916, 946, 998, 1002, 1004, 1006,\\
(52)\quad & 1008, 1010, 1030, 1032, 1034, 1036, 1038, 1040, 1042, 1064, 1066,\\
(53)\quad & 1118, 1122, 1126, 1148, 1150, 1152, 1156, 1186, 1214, 1218, 1220,\\
(54)\quad & 1222, 1242, 1244, 1246, 1248, 1250, 1252, 1268, 1270, 1272, 1274,\\
(55)\quad & 1276, 1328, 1332, 1336, 1358, 1360, 1362, 1366, 1418, 1422, 1424,\\
(56)\quad & 1426, 1568, 1570, 1572, 1576, 1634, 1664, 1694, 1696, 1748, 1752,\\
(57)\quad & 1756, 1784, 1814, 1816, 1818, 1822, 1844, 1848, 1852, 1870, 1906,\\
(58)\quad & 1936, 1994, 1996, 2024, 2028, 2032, 2054, 2056, 2082, 2084, 2114,\\
(59)\quad & 2168, 2172, 2176, 2206, 2264, 2294, 2298, 2326, 2354, 2410, 2412,\\
(60)\quad & 2416, 2446, 2504, 2536, 2564, 2624, 2628, 2630, 2632, 2656, 2746,\\
(61)\quad & 2836, 2924, 2956, 3044, 3048, 3050, 3052, 3076, 3134, 3138, 3142,\\
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(63)\quad & 3374, 3376, 3404, 3406, 3408, 3412, 3460, 3586, 3614, 3644, 3704,\\
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