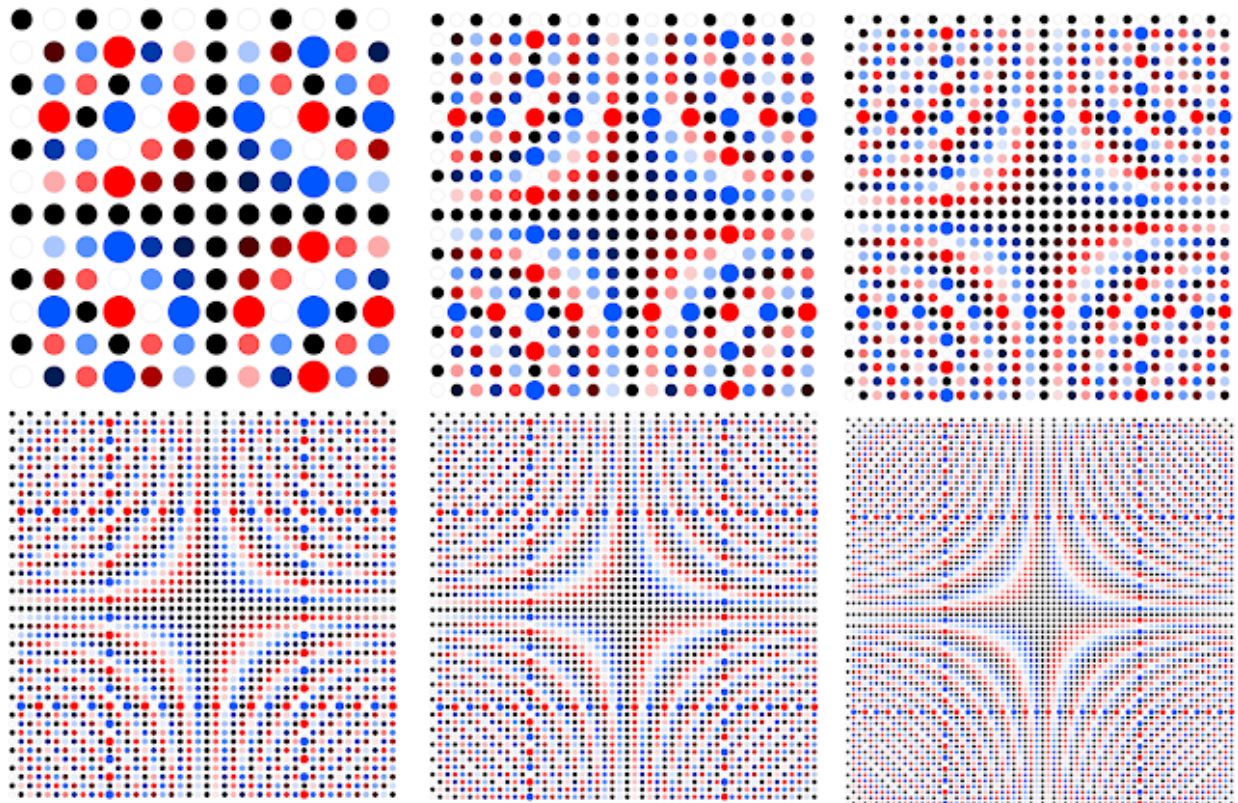


Cinquante signes

Prime sums from neighbouring terms



novembre 11, 2019



Hello SeqFans,

I'm working on this idea with my friend **Jean-Marc Falcoz**. Look at the following sequence S:

$S = 1, 2, 7, 3, 6, 4, 5, 8, 10, 11, 9, 12, 14, 15, 13, 18, 17, 19, 20, 21, 24, 16, \dots$

Pick any triplet of successive terms: there is only **one** way to build a prime by adding two out of the three integers of the triplet. (S is the lexicographically earliest sequence of distinct terms with this property).

Indeed the triplet 1,2,7 permits only to build the prime $3=1+2$ as $1+7=8$ (composite) and $2+7=9$ (composite).

The triplet 2,7,3 permits only the prime $5=2+3$ as $2+7=9$ (composite) and $7+3=10$ (composite).

The triplet 7,3,6 permits only the prime $13=7+6$ as $7+3=10$ (composite) and $3+6=9$ (composite).

Etc.

The same task could be performed if we change the "triplet" condition to "quadruplet":

$T = 1,2,7,8,4,14,\dots$

Indeed the quadruplet 1,2,7,8 permits only the prime $3=1+2$ as $1+7=8$ (composite), $1+8=9$ (composite), $2+7=9$ (composite), $2+8=10$ (composite) and $7+8=15$ (composite too).

The quadruplet 2,7,8,4 permits only the prime $11=7+4$ as $2+7=9$ (composite), $2+8=10$ (composite), $2+4=6$ (composite), $7+8=15$ (composite) and $8+4=12$ (composite too).

The quadruplet 7,8,4,14 permits only the prime $11=7+4$ as the other two-term sums in the quadruplet produce composite numbers.

(Note that no term < 14 can complete the above quadruplet as **3** would permit another prime-sum $7=3+4$ $\sim\sim$ **5** would produce $13=5+8$ $\sim\sim$ **6** would allow $13=6+7$ $\sim\sim$ **9** would allow $13=9+4$ $\sim\sim$ **10** would lead to $17=10+7$ $\sim\sim$ **11** would produce $19=11+8$ $\sim\sim$ **12** would lead to $19=12+7$ and **13** would produce $17=13+4$).

The same task could be performed if we change the "quadruplet" condition to "quintuplet":

$U = 1,2,7,8,14,4,\dots$

We will explore 8 such sequences, from the "triplet" to the "decuplet" constraint, from the S sequence to T, U, V, W, X, Y and Z.

Another approach would be this one: the triplet, instead of one prime, produces no prime at all (I suspect this seq is already in the OEIS).

With the variant (to be explored too): the triplet produces exactly two primes and a single composite (by adding 2 out of 3 terms of the triplet).

The same with the quadruplet: two primes and two composites ~~ three primes and a single composite.

The same with the quintuplet: two primes and three composites ~~ three primes and two composites ~~ four primes and one single composite.

Etc. – until the full decuplets variants.

A lot of work – worth the OEIS?

Best,

É.



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A square for three (chess)

juin 22, 2024



(English translation after the French text) Voici cinq problèmes d'échecs disjoints : a) combien faut-il de coups au minimum pour que trois pions soient capturés sur la même case ? b) trois tours c) trois c ...

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Le tripalin se présente

avril 11, 2024



Un tripalin est constitué de trois images. Chaque image illustre un substantif. Accolés, ces trois substantifs forment une chaîne palindromique. Laquelle nous vous invitons à trouver. Exer ...

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Some strings au cinéma Galeries

juillet 19, 2024

Lettre ouverte au cinéma Galeries Bonsoir à tous, Je viens de voir pour la seconde fois chez vous le beau film de Léos Carax (la première fois c'était le 26 juin en présence du réalisateur, au BRIFF). Apparut à l'écran aujourd'hui, avant la projection propre ...

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