Appendix 2: Pictures of prime numbers for real UFD

The pictures show the quadratic character and a picture of prime numbers and units for some real quadratic fields whose domain of integers is a unique-factorization domain, namely, for radicands < 32,

the fields of discriminant congruent 0 modulo 4:

Q(√2), Q(√3), Q(√6), Q(√7), Q(√11), Q(√14), Q(√19), (√22), Q(√23), Q(√31)

and the fields of discriminant congruent 1 modulo 4:

Q(√5), Q(√13), Q(√17), Q(√21), Q(√29).

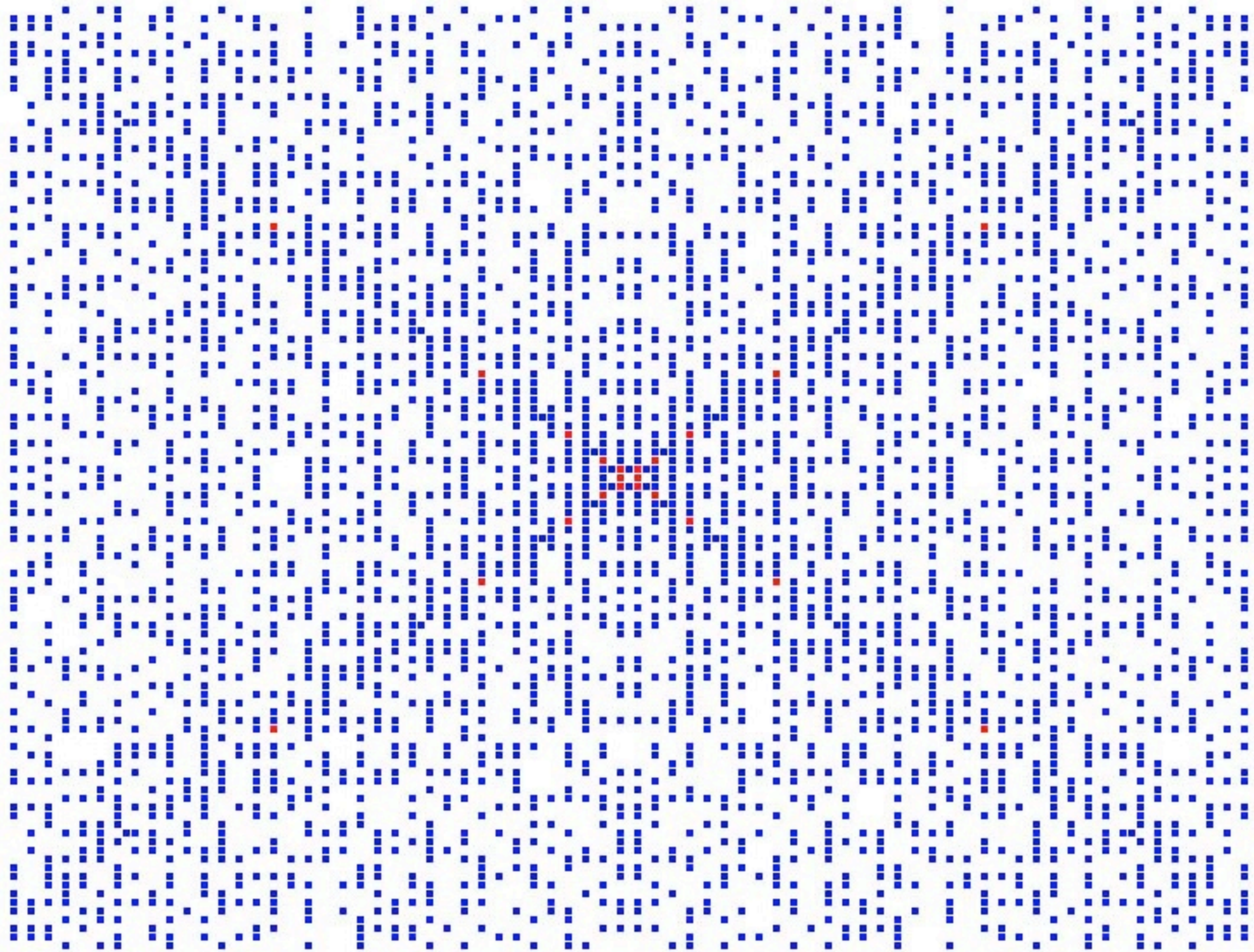
At the top, each picture mentions the field, ℚ(√r), and displays its quadratic character (as far as space allows).

In the pictures, rational integers are placed on the x-axis and numbers of the form √r times rational integers on the y-axis.

When d ≡ 0 modulo 4, we use a square grid, otherwise a staggered grid, where the grid points form roughly equilateral triangles.

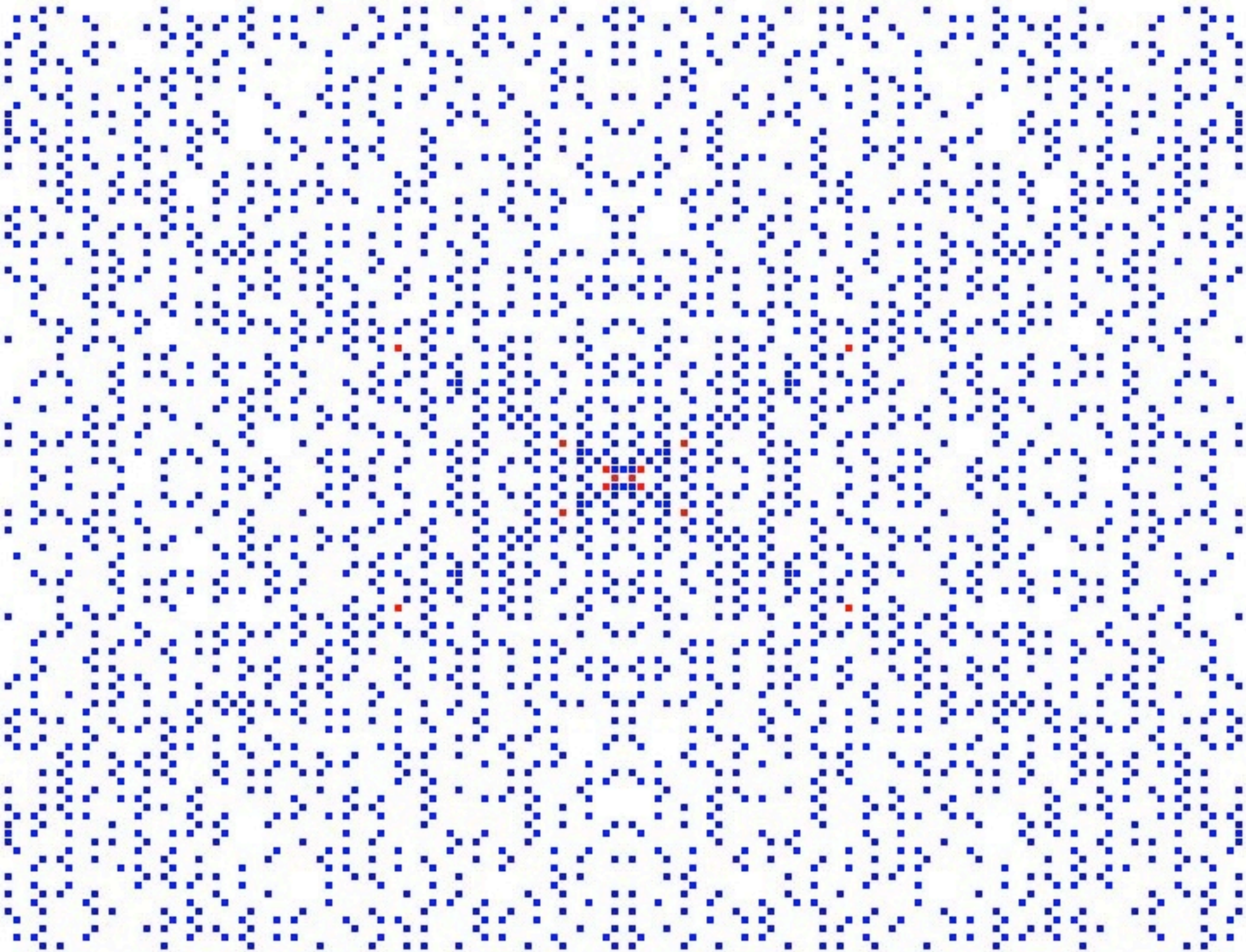
Q($\sqrt{2}$) chi prime numbers units

0+0-0-0+



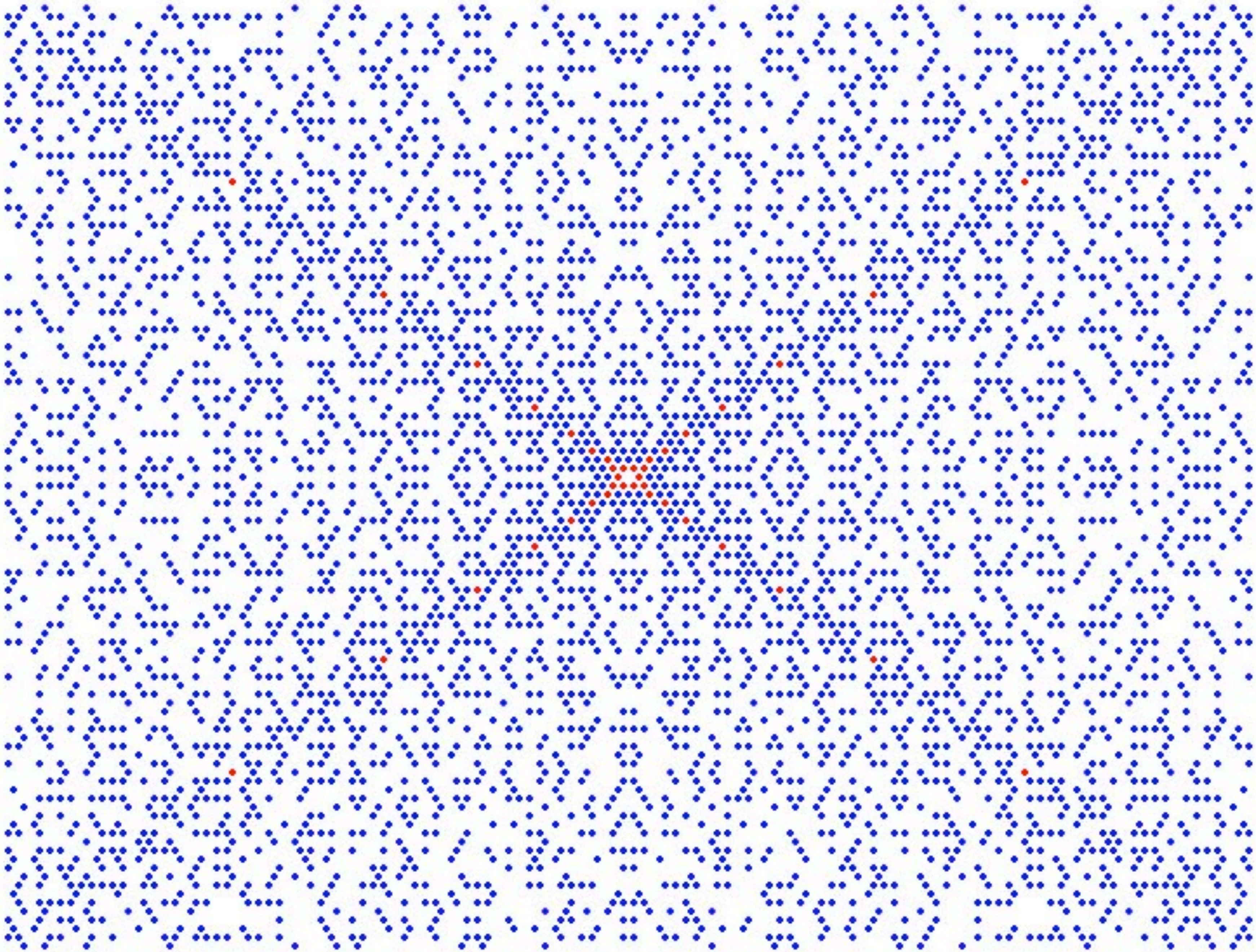
$Q(\sqrt{3})$ chi prime numbers units

0+000-0-000+



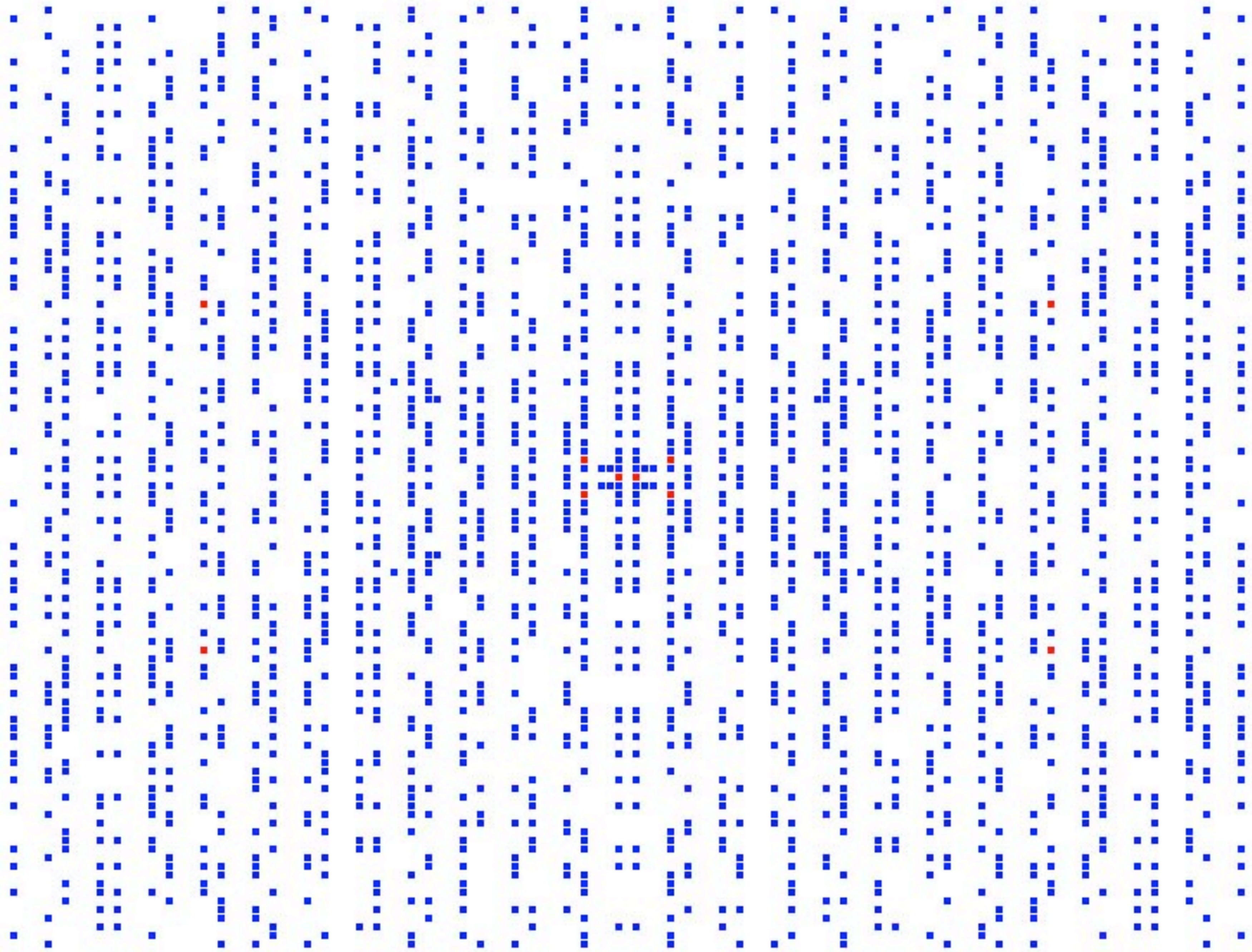
Q(√5)   chi   prime numbers   units

0+--+



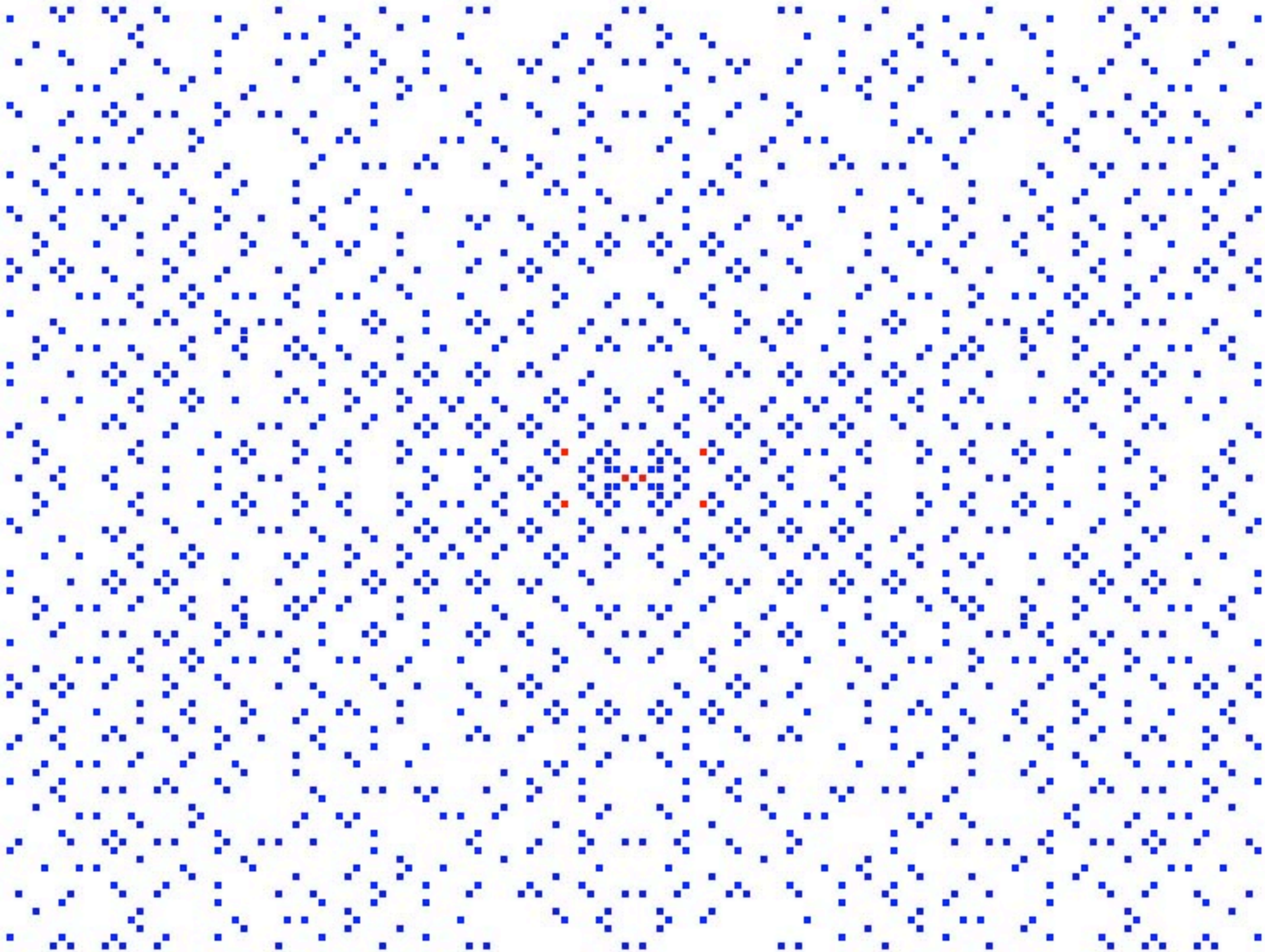
$Q(\sqrt{6})$ chi prime numbers units

0+000+0-000-0-000-0+000+



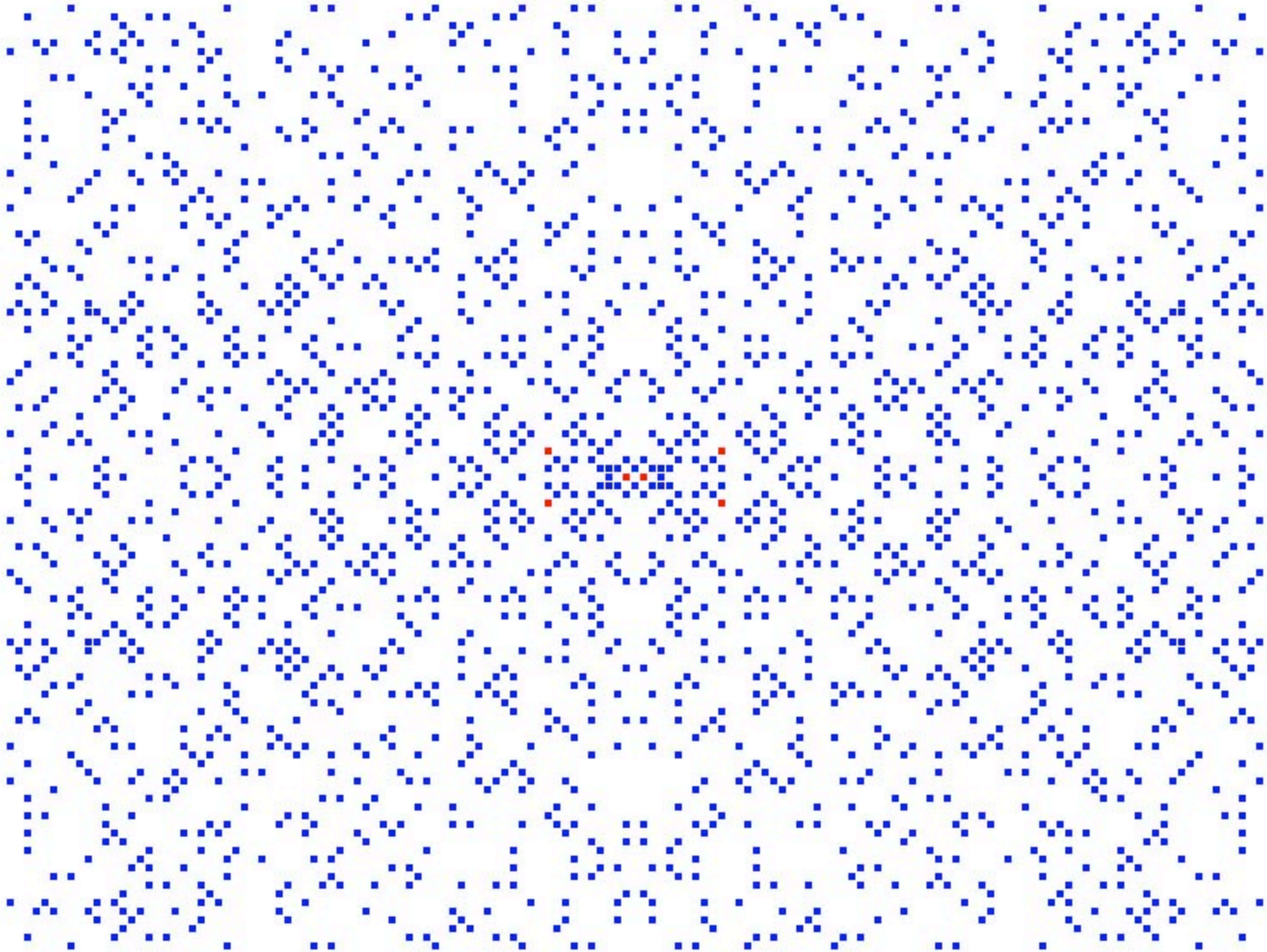
Q(√7) chi prime numbers units

0+0+0-000+0-0-0-0-0+000-0+0+



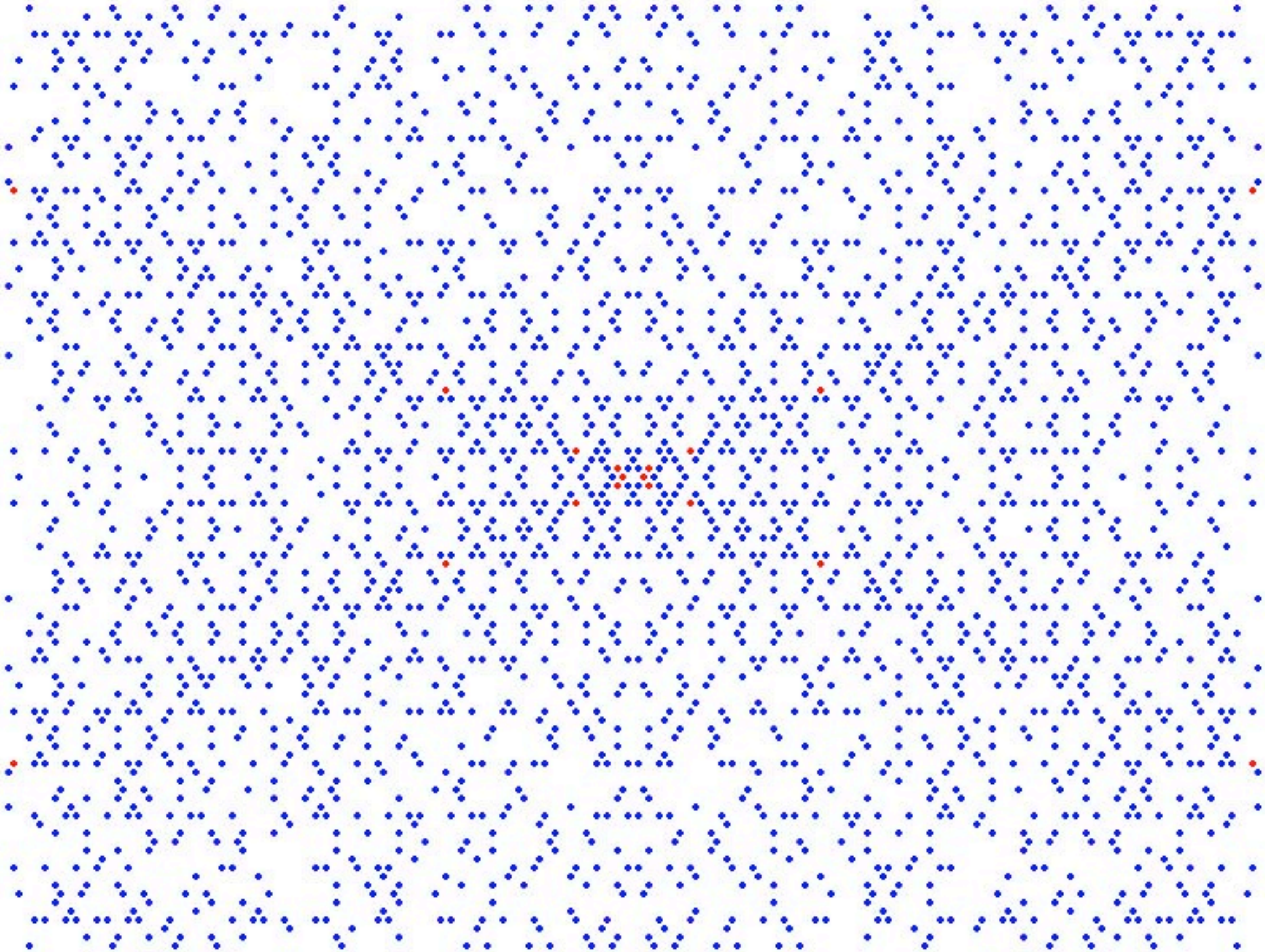
$Q(\sqrt{11})$ chi prime numbers units

0+0-0+0+0+000-0-0-0+0-0-0+0-0-0-000+0+0+0-0+



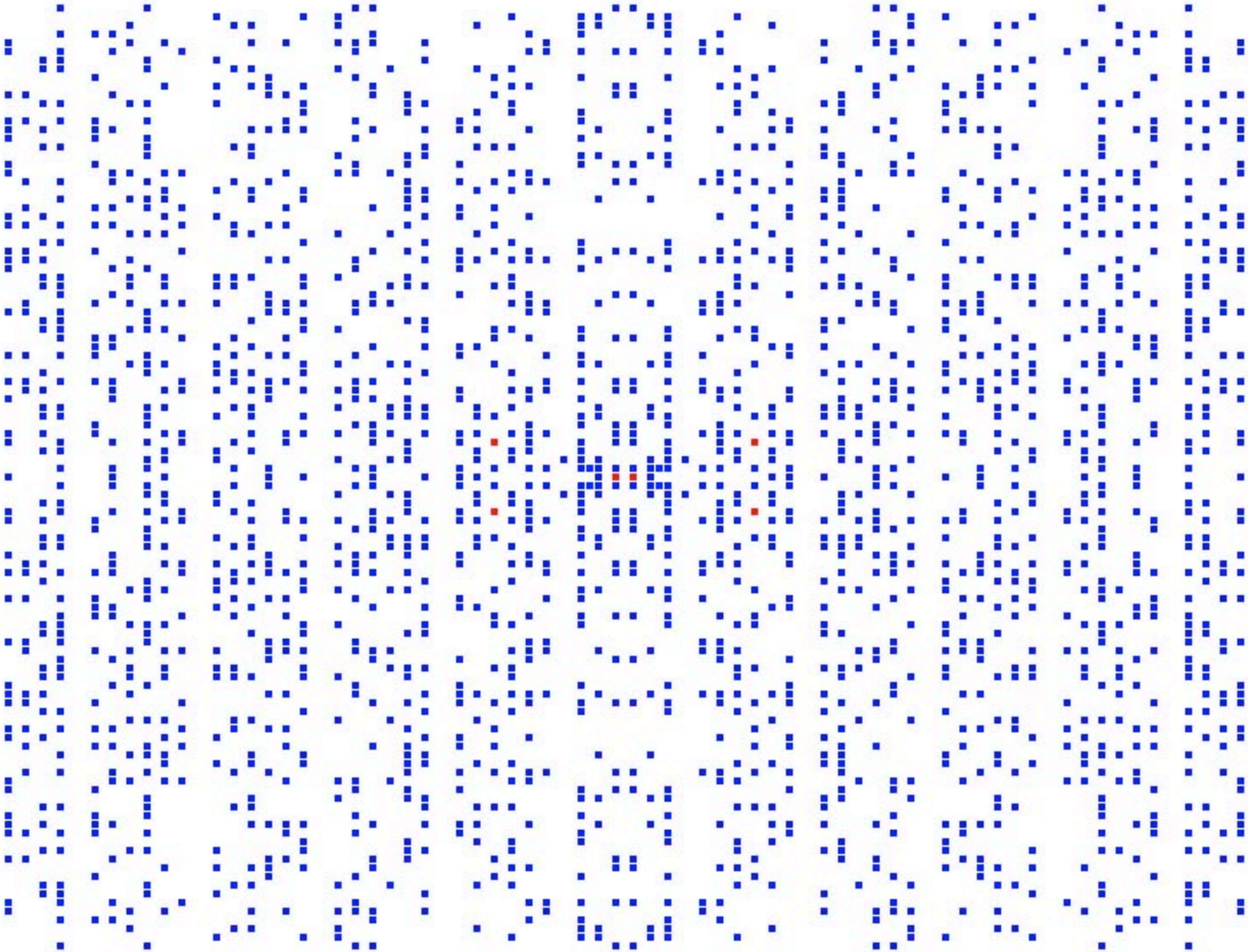
Q(√13)   chi   prime numbers   units

0+-++----++-+



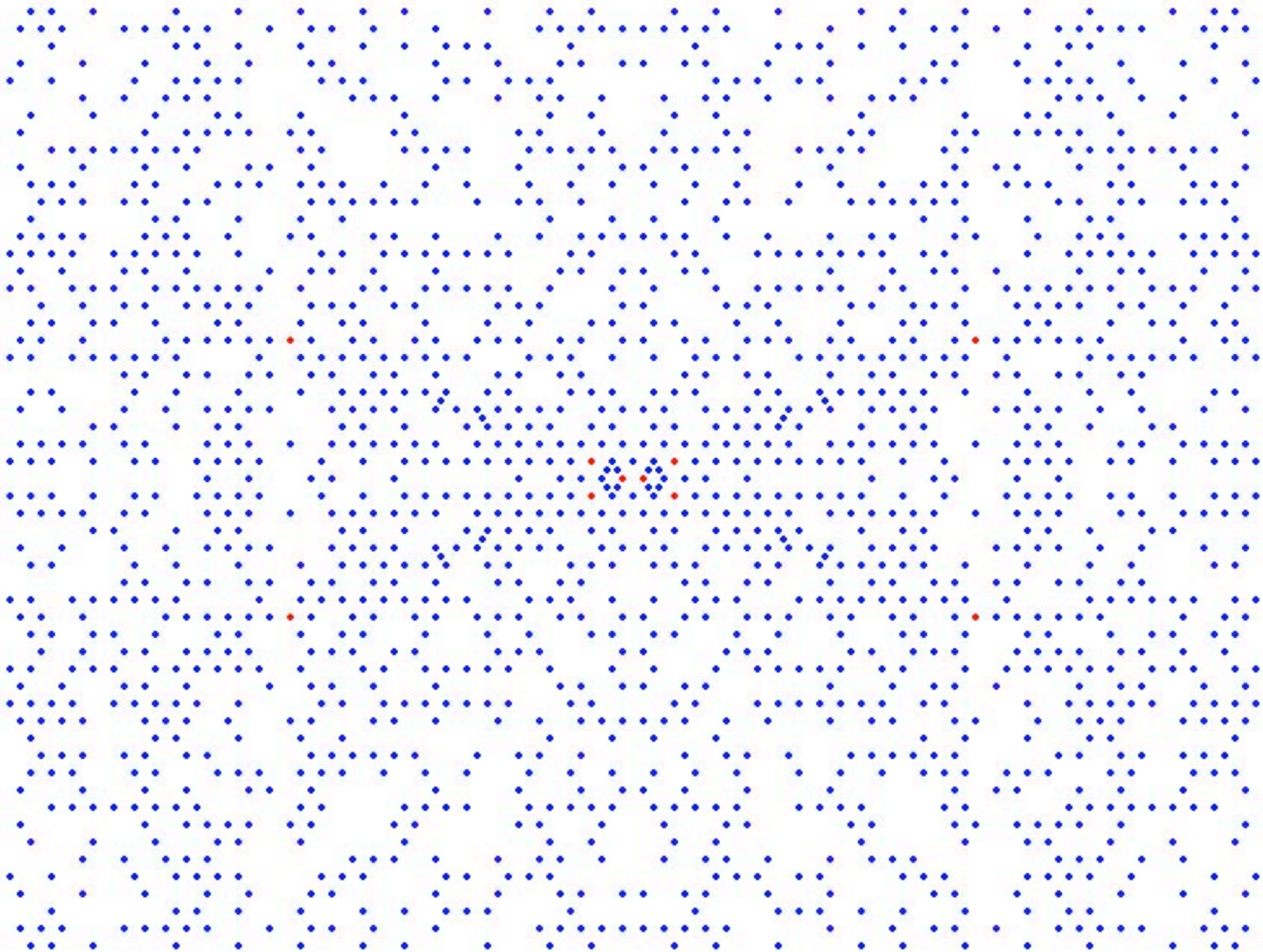
$\mathbb{Q}(\sqrt{14})$ chi prime numbers units

0+0-0+000+0+0+0-0-0-000-0+0-0-0+0-000-0-0-0+0+0+000+0-0+



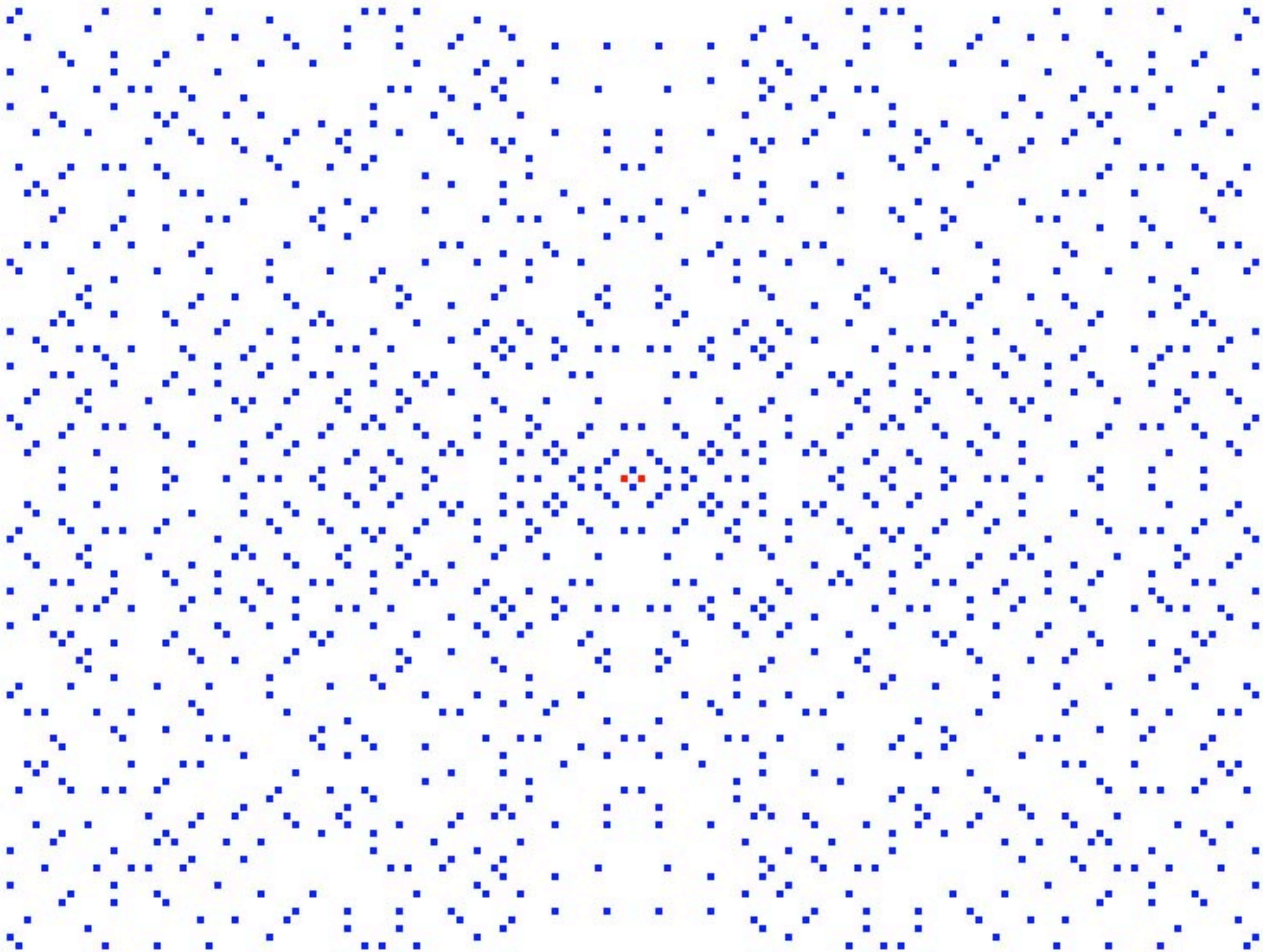
Q(√17)　chi　prime numbers　units

0++-+---++---+-++



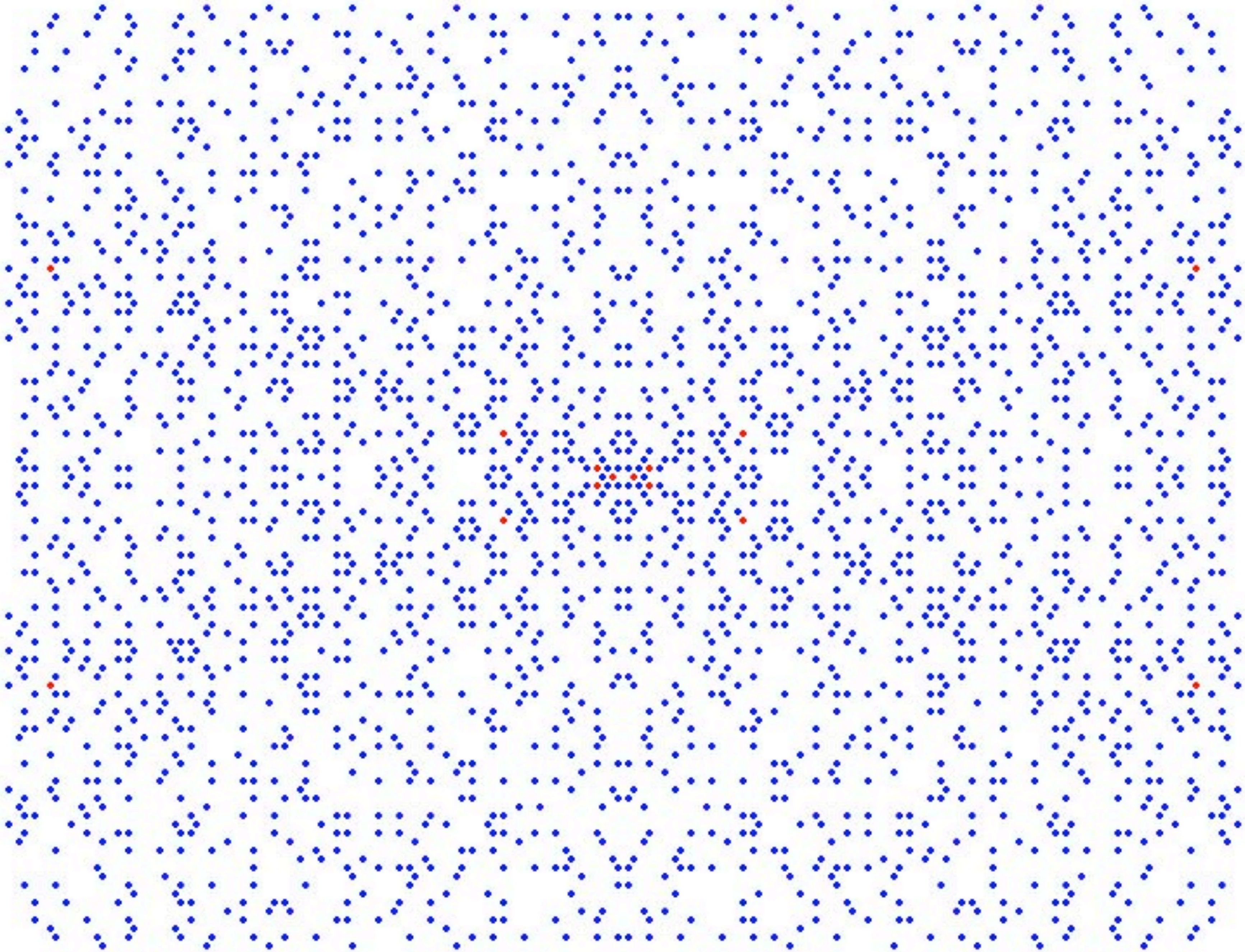
$Q(\sqrt{19})$ chi prime numbers units

0+0+0+0-0+0-0-0+0+000-0-0+0+0-0+0-0-0-0-0-0-0+0-0+0+0-0-000+0+0-0-0+0-0+0+0+



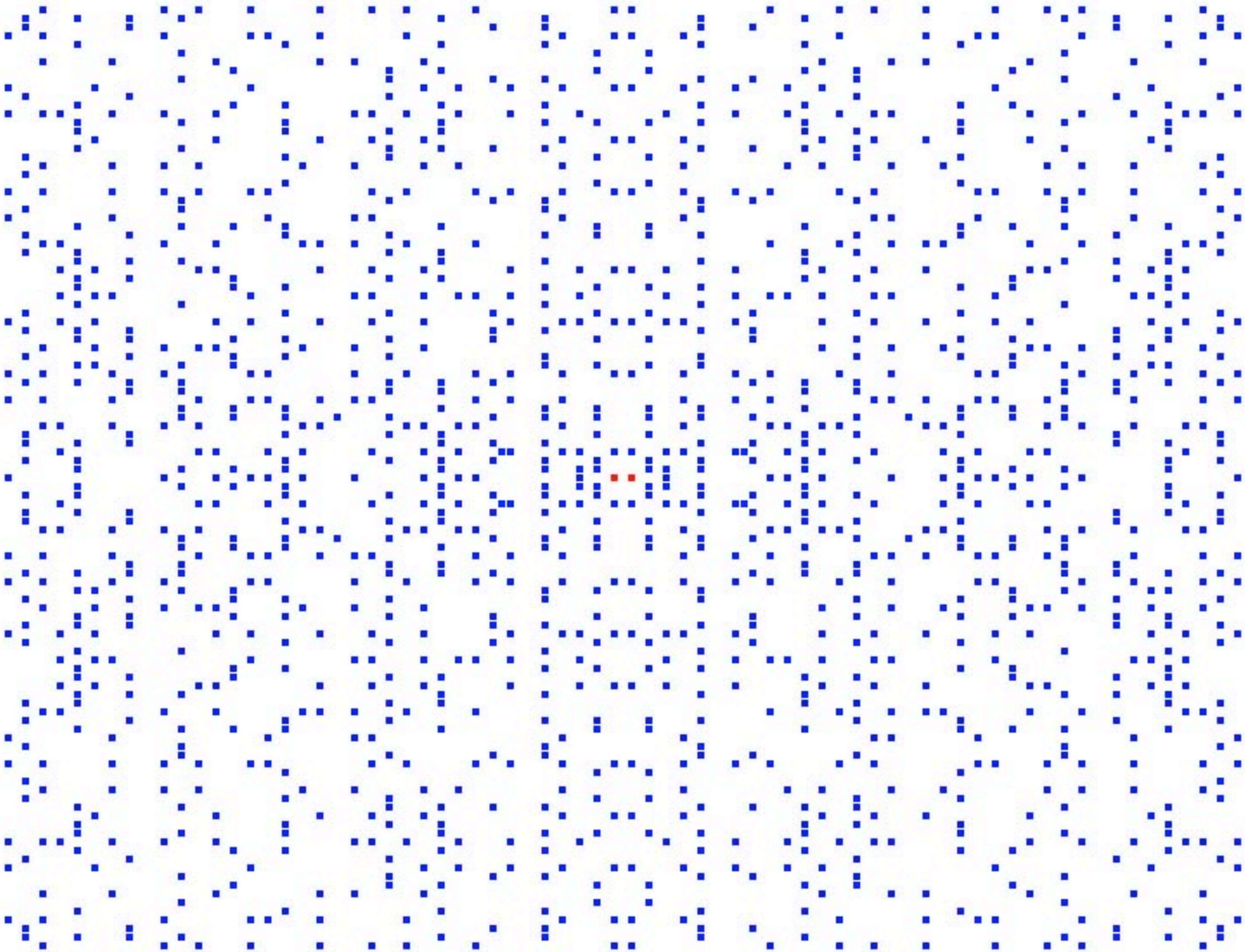
Q($\sqrt{21}$) chi prime numbers units

0+-0++00-0--0-00++0-+



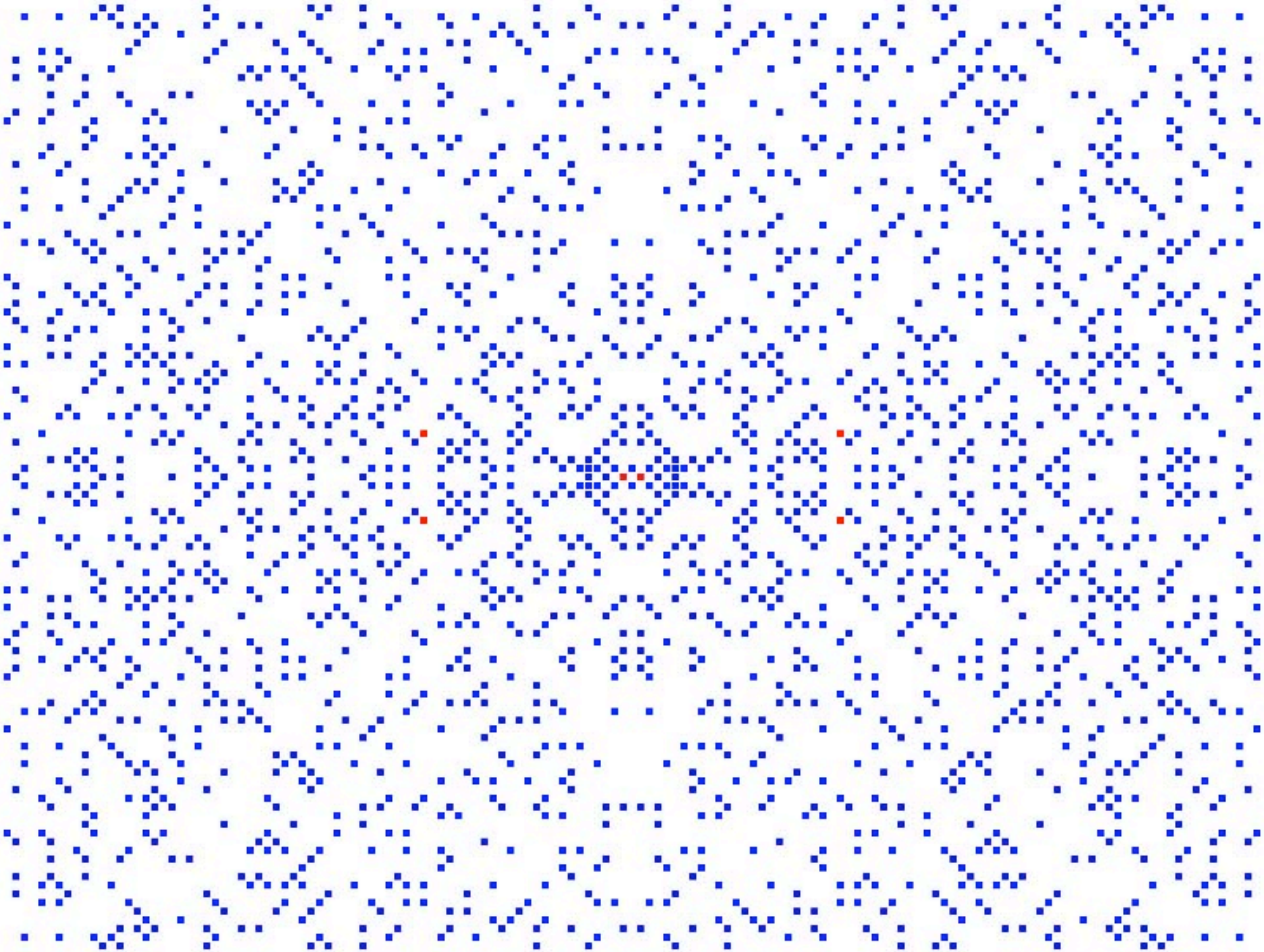
Q(√22) chi prime numbers units

0+0+0-0+0+000+0-0-0-0+0-0+0+0+0-000-0-0+0-0-0-0-0+0-0-000-0+0+0+0-0+0-0-0-0+000+0+0-0+0+



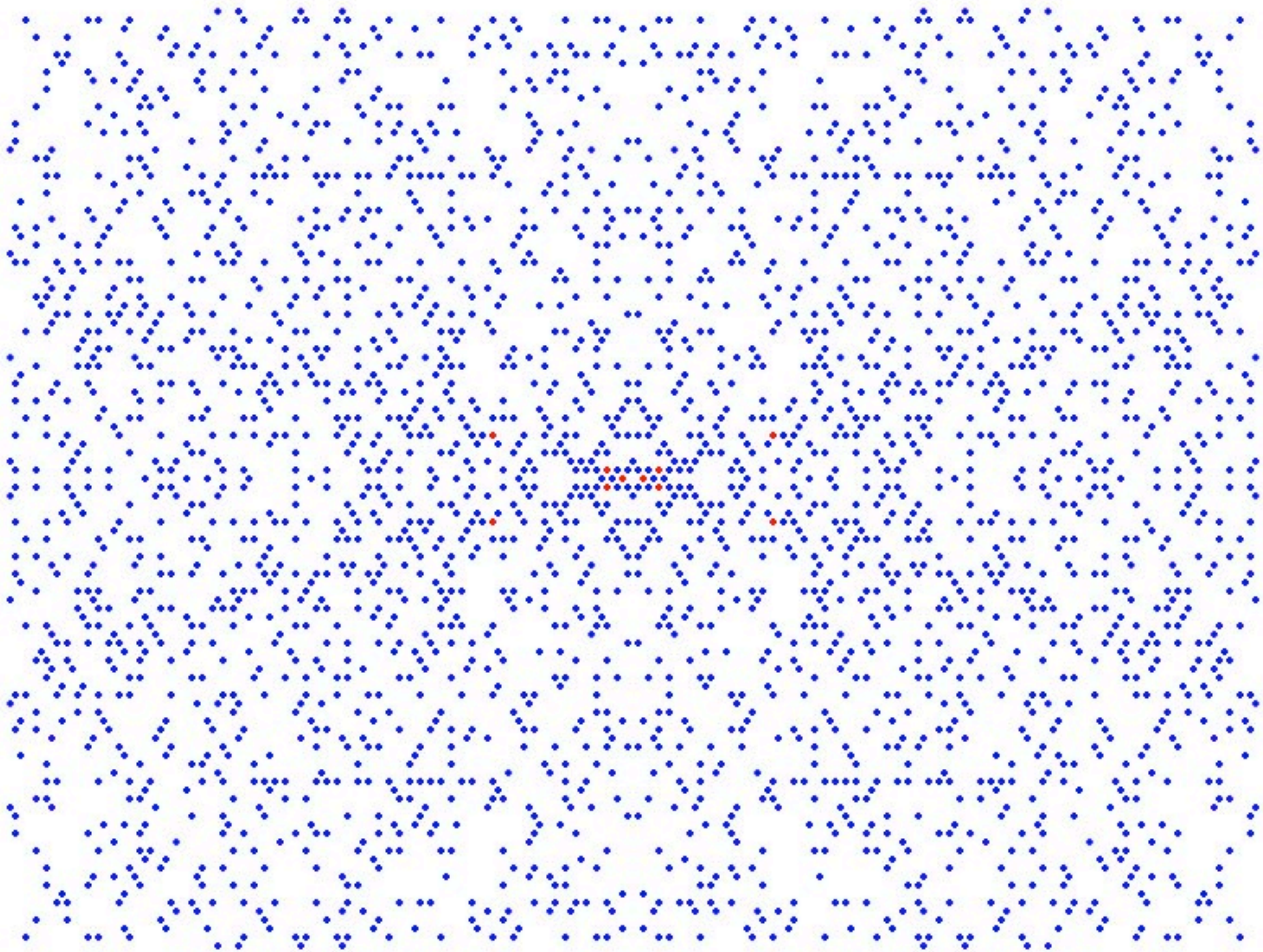
Q(√23) chi prime numbers units

0+0-0-0+0+0+0+0+0-0+0-000+0-0+0-0-0-0-0-0+0+0-0-0-0+0+0-0-0-0-0-0-0+0-0+000-0+0-0+0+0+0+0+0-0-0+



Q(√29)   chi   prime numbers   units

0+--++++-+---+--+---+-++++--+



$Q(\sqrt{31})$ chi prime numbers units

0+0+0+0-0+0+0-0+0-0-0-0+0+0+0-000+0-0-0-0+0+0+0-0+0-0-0+0-0-0-0-0-0-0+0-0-0+0-0+0+0+0-0-0-0+000-0+0+0+0-0-0-0+