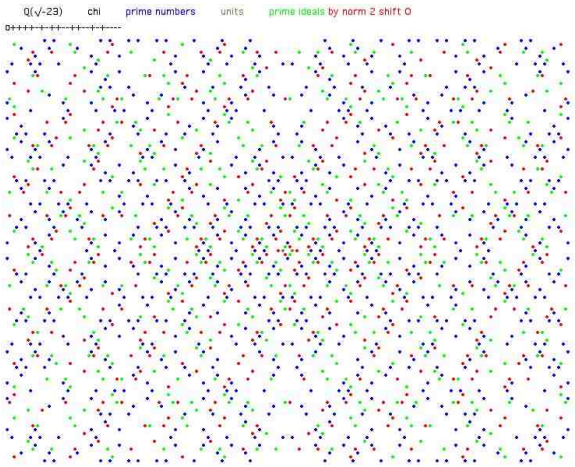
Appendix 7: Pictures of prime numbers and ideals for complex fields of class number 3

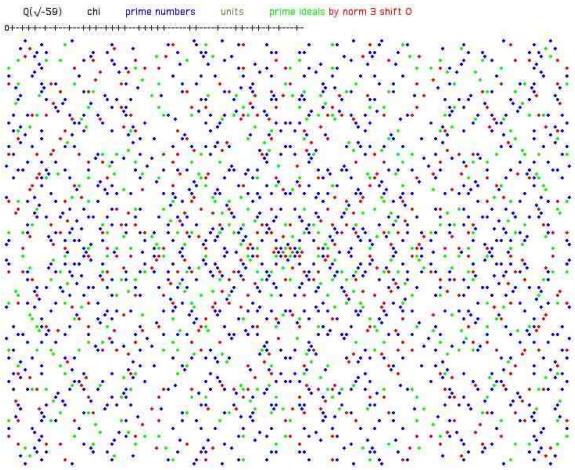
The pictures show the quadratic character and a picture of prime numbers, units and two mutually conjugate classes of non-principal prime ideals, one class red, and the other class green for the complex quadratic fields of class number 3 of discriminant larger than -350, namely
- since no complex fields of discriminant congruent 0 modulo 4 exist in this class -

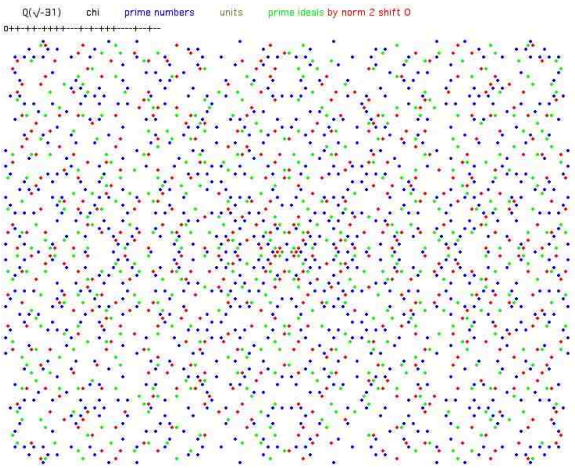
the fields of discriminant congruent 1 modulo 4:

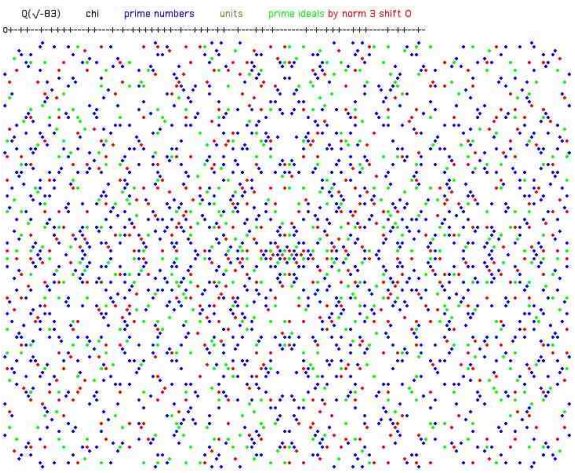
$Q(\sqrt{-23})$, $Q(\sqrt{-31})$, $Q(\sqrt{-59})$, $Q(\sqrt{-83})$, $Q(\sqrt{-107})$, $Q(\sqrt{-139})$, $Q(\sqrt{-211})$, $Q(\sqrt{-283})$, $Q(\sqrt{-307})$, $Q(\sqrt{-331})$.

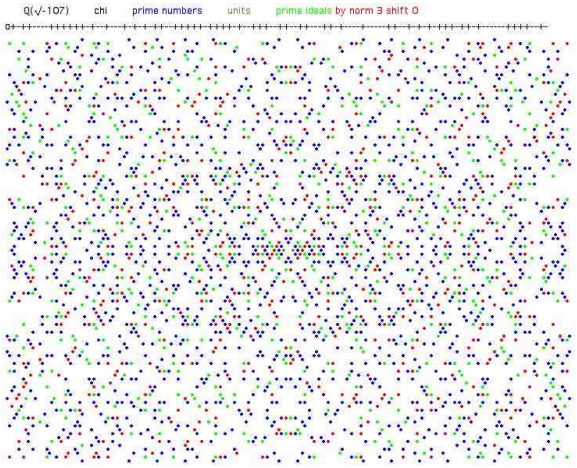
The pictures display the prime numbers, which generate the principal prime ideals, but not those irreducible numbers which are not prime.
Moreover, the non-principal prime ideals are displayed as follows.
The non-principal ideals are obtained by dividing principal ideals by a certain non-principal prime ideal, I, or its conjugate, where I := [norm, ζ], ζ := shift + (1 + √d) / 2,
i.e. I is generated by 'norm' being its norm, and the integer ζ of $Q(\sqrt{r})$.
In the picture, the non-principal prime ideals then are represented by those numbers whose norm is equal to a prime norm times the norm of I. This norm of I and shift are mentioned at the top of the picture, shift being needed to distinguish between the two mutually conjugate classes of non-principal ideals.

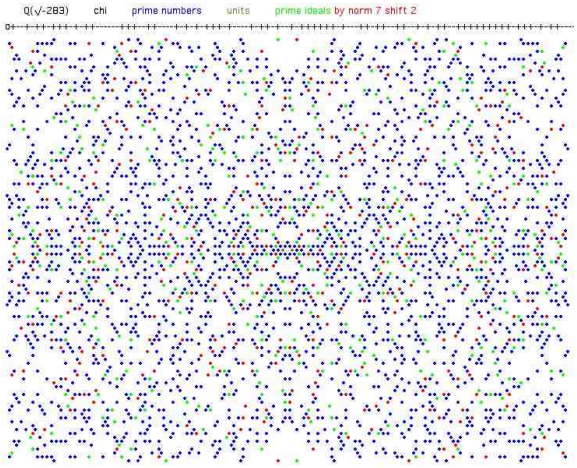


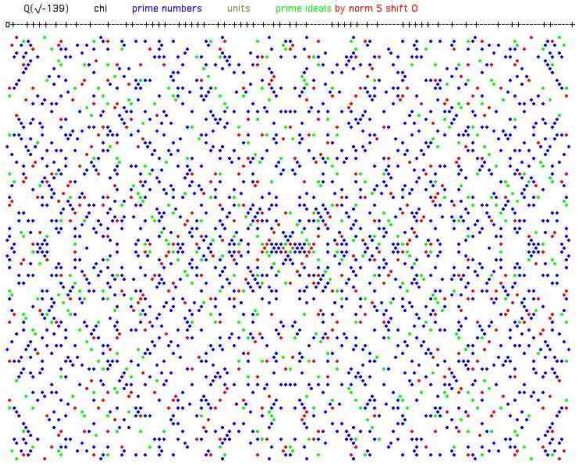


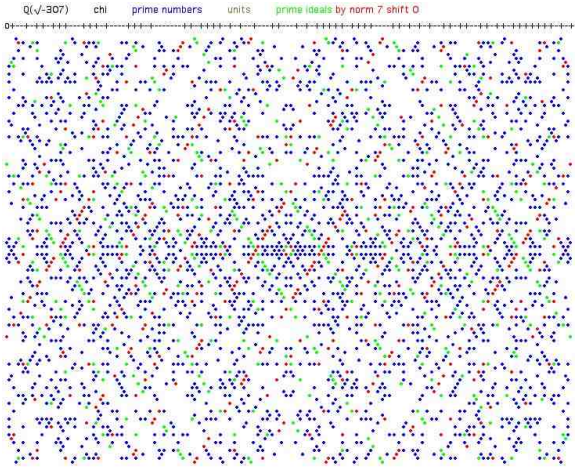


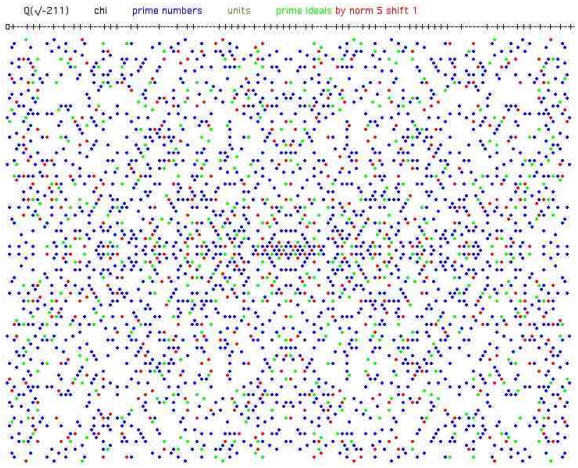


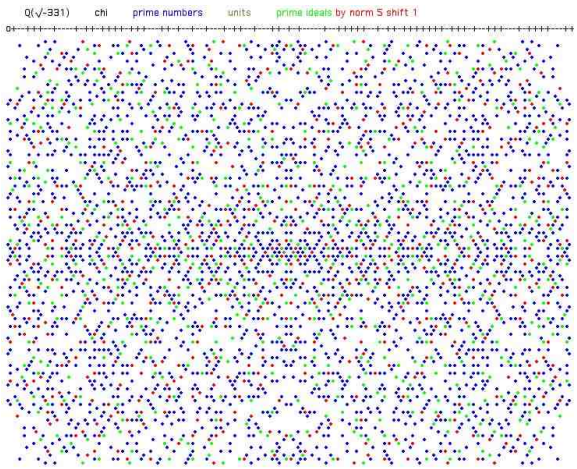

Q(√-107) chi prime numbers units prime ideals by norm 3 shift 0


Q(√-283) chi prime numbers units prime ideals by norm 7 shift 2


Q(√-139) chi prime numbers units prime ideals by norm 5 shift 0


Q(√-307) chi prime numbers units prime ideals by norm 7 shift 0


Q(√-211) chi prime numbers units prime ideals by norm 5 shift 1


Q(√-331) chi prime numbers units prime ideals by norm 5 shift 1