Online Number Theory Seminar

11 February 2022. – 17:00-17:50

Manjul Bhargava: In how many ways can an order in a quartic field be monogenized?

We show that an order in a quartic field has fewer than 3000 essentially different generators as a $\mathbb{Z}$-algebra (and fewer than 200 if the discriminant of the order is sufficiently large). This significantly improves the previously best known bound of 2^{72}.
Analogously, we show that an order in a quartic field is isomorphic to the invariant order of at most 10 classes of integral binary quartic forms (and at most 7 if the discriminant is sufficiently large). This significantly improves the previously best known bound of 2^{80}.
We will also discuss some recent work of Shabnam Akhtari that we use to prove the above results.