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The number of quartic-D_4 fields having monogenic cubic resolvent ordered by conductor

In this talk we discuss how to count quartic fields whose Galois group is isomorphic to the dihedral group D_4 and whose ring of integers has a monogenic cubic resolvent ring, ordered by their Artin conductor. In particular we give an asymptotic formula for the number of such fields having a given signature. The techniques we develop also enable us to count such quartic fields by discriminant (but we do not obtain an asymptotic formula) and also elliptic curves with a marked 2-torsion point by discriminant. This is joint work with Cindy Tsang.