

Distribution questions surrounding number fields

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Abstract

A natural algebraic and number-theoretic question to ask is how many number fields of given Galois group there are up to a certain size X , for an appropriate definition of "size". When size is measured by the discriminant of a number field, there are asymptotic results in the cubic case due to Davenport-Heilbronn and in the quartic and quintic case due to Manjul Bhargava. We will survey their work, and then see how these results can be used as input to prove a different, but related, question arising from predictions made by the Katz-Sarnak philosophy, on distribution of zeros of families of L-functions.