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([cwesterl@umn.edu](mailto:cwesterl@umn.edu)). *Second order terms in arithmetic statistics*. Preliminary report.

It's an old conjecture that the the cardinality of the set of number fields of degree  $n$  and discriminant bounded by  $X$  grows asymptotically linearly in  $X$ . This is classical when  $n = 2$ , due to Davenport-Heilbronn for  $n = 3$ , and Bhargava for  $n = 4, 5$ . Work of Taniguchi-Thorne and Bhargava-Shankar-Tsimerman establishes a second-order term for cubic extensions.

In this talk, we will report on work in progress aiming to establish a second order term in the function field setting, as well as giving a general heuristic for what we believe the degree of the second-order term to be. Our tools are homological algebraic, coming from the Koszul complex of the Nichols algebra associated to the Galois data; this gives refined information on the cohomology of the Hurwitz moduli spaces of branched covers with this Galois data. (Received January 20, 2020)