

PRIME DENSITIES FOR GL_1 AND GL_2

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If we fix a rational number x , Artin's basic question "for how many primes p does $x \bmod p$ generate the multiplicative group of non-zero integers modulo p ?" leads to Artin's conjecture on primitive roots, and the associated prime density depends in a somewhat non-trivial way on x . A conceptual way to compute such densities is given by the character sum method that I developed with Moree and Lenstra, and that exploits Galois representations coming from the multiplicative group.

Artin-type questions also exist in an elliptic setting, as do the associated Galois representations. I will explain how our character sum method extends to this case.

Joint work with Pieter Moree (Max Planck Institut Bonn) and Hendrik Lenstra (Universiteit Leiden).