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**Willem Jan Palenstijn\*** ([wpalenst@math.leidenuniv.nl](mailto:wpalenst@math.leidenuniv.nl)), Mathematical Institute, P.O. Box 9512, 2300RA Leiden, Netherlands. *Computing near-primitive root densities*. Preliminary report.

Artin's primitive root conjecture gives for a non-zero integer  $x$  an expression for the density of primes  $q$  for which  $x$  is a primitive root modulo  $q$ . In this talk, we consider the following generalization: given a number field  $K$ , an element  $x$  of  $K^*$  and a positive integer  $d$ , we compute a conjectured density of primes  $q$  of  $K$  for which the subgroup of the multiplicative group of the residue class field of  $q$  generated by  $x$  has index dividing  $d$ . The key step is to identify an "obstruction group" that measures which automorphisms of certain groups of radicals extend to field automorphisms. The conjectured density is then given in terms of the characters of this group. (Received September 26, 2005)