Asymptotics of number fields and the Cohen–Lenstra heuristics

par JÜRGEN KLÜNERS

Dedicated to Michael Pohst on the occasion of his 60th birthday

Abstract. We study the asymptotics conjecture of Malle for dihedral groups $D_\ell$ of order $2\ell$, where $\ell$ is an odd prime. We prove the expected lower bound for those groups. For the upper bounds we show that there is a connection to class groups of quadratic number fields. The asymptotic behavior of those class groups is predicted by the Cohen–Lenstra heuristics. Under the assumption of this heuristic we are able to prove the expected upper bounds.

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