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Galois groups in a family of dynatomic polynomials

For any polynomial f with rational coefficients and any positive integer n , let $\Phi_{n,f}$ denote the n -th dynatomic polynomial of f . We will discuss the problem of determining all the groups that can occur as the Galois group of $\Phi_{n,f}$ for some quadratic polynomial f . In particular we will use an explicit form of Hilbert's Irreducibility Theorem to give a complete answer in the case $n = 4$, and we will prove a finiteness result for larger values of n .