SIEVE PROBLEMS ARISING FROM FINITE GRIUP THEORY

Jan-Christoph Schlage-Puchta (University of Rostock)

Abstract: Many numerical invariants in algebraic structures are not multiplicative, but arise as the least common multiple of other quantities. For example, the order of a permutation equals the least common multiple of the lengths of the cycles in this permutation. One way of distinguishing different invariants is by looking at large prime factors. As we understand the global distribution of smooth numbers quite well we can show that certain invariants are almost always determined by some of their large prime factors.

As application we consider the probability that two random permutations have equal order, and estimate the density of the set of integers n such that all groups of order n are solvable resp. supersolvabe.