

THE DEGREE OF OPERATIONS ON GROUPS

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In 1979 Harold Ward introduced the combinatorial degree of operations on abelian groups as some generalization of the degree of polynomials on commutative rings. We extend his notion further to arbitrary groups. In particular, this allows us to characterize finite p -groups as those groups on which all operations have finite degree. The proof of that result uses some basic facts of group representation theory.

As an application we obtain efficient algorithms for several computational problems (membership, size, ...) on subalgebras of direct powers of groups with additional operations.

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