ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

2. Algebra

1991 MS Classification: 20
Chowdhury, Munibur Rahman, University of Dhaka, Bangladesh

A commutativity theorem for groups

Theorem. Suppose K is a cyclic normal subgroup of G such that the factor group G/K is cyclic and its order m is coprime to phi of k, the order of K. Then G is abelian.

In this situation G has order mk and is generated by two elements a, b with a to the power n in K and o(b) = k.

Remark. The stated condition though sufficient, is not necessary for G to be abelian.

Using the fact [1] that every group whose order is a product of distinct primes has a normal Sylow subgroup, we obtain a new inductive proof of the Theorem. Every group of order n is cyclic if n coprime to phi to n.

1. F. G. Frobenius, "Uber auflosbare Gruppen, Sitzber. Akad. Berlin 337-345 (1893) = Gesammelte Werke II, No. 43, 565-573.