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Section:

2. Algebra

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Finite 2-groups with automorphisms of order four

Kovacs's theorem [1] states that the second term of the derived series of a locally finite or locally nilpotent group G with an automorphism of order 4 without nontrivial fixed elements lies in the centre of G. It is proved that a finite 2-group G admitting an automorphism of order 4 with exactly m fixed points contains a subgroup H of m-bounded index in G such that the second term of the derived series of H lies in the centre of H. Earlier in [2] it was proved that under the same conditions G contains a subgroup of m-bounded index, whose commutator subgroup is nilpotent of class at most 3.

Reference:

1. L. G. Kovács, Groups with regular automorphisms of order four, *Math. Z.* , **75** (1961), 277–294.
2. N. Yu. Makarenko, Finite 2-groups admitting an automorphism of order 4 with few fixed points, *Algebra and Logic*, **32** (1993), 215–230.