Gupta, Ch.; **Romanovskij, N. S.**

Normal automorphisms of a free pro-p-group in the variety $\mathcal{N}_2\mathcal{A}$. (English. Russian original)

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Summary: An automorphism of a (profinite) group is called normal if each (closed) normal subgroup is left invariant by it. An automorphism of an abstract group is p-normal if each normal subgroup of p-power index, where p is a prime, is left invariant. Obviously, an inner automorphism of a group is normal and p-normal. For some groups, the converse was stated to be likewise true. N. Romanovskij and V. Boluts, for instance, established that for free solvable pro-p-groups of derived length 2, there exist normal automorphisms that are not inner. Let $\mathcal{N}_2$ be the variety of nilpotent groups of class 2 and $\mathcal{A}$ the variety of Abelian groups. We prove the following results: (1) If p is a prime number distinct from 2, then a normal automorphism of a free pro-p-group of rank ≥ 2 in $\mathcal{N}_2\mathcal{A}$ is inner (Theorem 1): (2) if p is a prime number distinct from 2, then a p-normal automorphism of an abstract free $\mathcal{N}_2\mathcal{A}$-group of rank ≥ 2 is inner (Theorem 2).

MSC:

20E18 Limits, profinite groups
20E36 Automorphisms of infinite groups
20E10 Quasivarieties and varieties of groups
20E28 Maximal subgroups

Keywords:

normal automorphisms; inner automorphisms; free solvable pro-p-groups; varieties of nilpotent groups; p-normal automorphisms

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