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Barely transitive locally nilpotent p-groups. (English) Zbl 0897.20028

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The following notion was introduced by *B. Hartley* [Algebra Logika 13, 589-602 (1974; Zbl 0305.20019)]: A group G of permutations of an infinite set X is said to be barely transitive if G itself is transitive on X while every orbit of any proper subgroup of G is finite. Moreover, a group G is called a CC-group iff $G/C_G(x^G)$ is Chernikov for every $x \in G$.

By a theorem of B. Love, if G is locally finite and $G' \neq G$ then G is a locally nilpotent p-group of Heineken-Mohamed type, but it is not known whether perfect barely transitive locally nilpotent p-groups exist.

In this paper it is shown that a barely transitive locally nilpotent p-group cannot be perfect if the stabilizer of a point is hypercentral and solvable. Two corollaries concerning locally nilpotent p-groups such that any proper subgroup is an FC-group or a CC-group are proved in addition.

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MSC:

20F19	Generalizations of solvable and nilpotent groups
20B07	General theory for infinite permutation groups
20F50	Periodic groups; locally finite groups
20F24	FC-groups and their generalizations
20E25	Local properties of groups

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