Completion of Metabelian Ordered Groups

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A theorem of embedding metabelian orderable groups into G-completed orderable groups was proved in 1974 year [**1**], however the embedding used in [**1**] does not allow to check an extending of every linear order of initial group up to its completion. So the completion problem for metabelian ordered groups was still open. We prove a possibility of such completion in our talk (Theorem 2, Corollary 3). Moreover we prove in Theorem 1 for finitely generated metabelian ordered groups an existence of finite series of normal convex subgroups which satisfy Mal′tsev–Podderugin–Rieger conditions (see [**2, 3**]). This theorem is essential for the proving of Theorem 2 and can be useful for description of all linear ordering of finitely generated metabelian groups.

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Theorem 1. *Every finitely generated metabelian linear ordered group G has finite series $1 = N_1 < \cdots < N_k = G$ of normal convex subgroups with abelian factors and satisfying a condition $[N_i, G'] \leqslant N_{i-1}$, $i = 2, \ldots, k$.*

Theorem 2. *Every metabelian linear ordered group G can be embedded with extending of its initial order into a suitable G^*-completed metabelian linear ordered group G^*.*

Corollary 3. *Every metabelian orderable group G can be embedded with extending any of its linear order into a suitable G^*-completed metabelian orderable group G^*.*

References

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