

Initial segments of computable linear orders with additional computable predicates

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Abstract

We study computable linear orders with computable neighborhood and block predicates. In particular, it is proved that there exists a computable linear order with a computable neighborhood predicate, having a ω -initial segment which is isomorphic to no computable order with a computable neighborhood predicate. On the other hand, every ω -initial segment of such an order has a computable copy enjoying a computable neighborhood predicate. Similar results are stated for computable linear orders with a computable block predicate replacing a neighborhood relation. Moreover, using the results obtained, we give a simpler proof for the Coles-Downe-Khoussainov theorem on the existence of a computable linear order with ω -initial segment, not having a computable copy. © 2009 Springer Science+Business Media, Inc.

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Computability, Initial segment, Linear order, Recursiveness