VALENTINA S. HARIZANOV, *Orders on Structures and Structure of Orders.*

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We investigate computability theoretic and topological properties of right orders, left orders and bi-orders on an algebraic structure with a single binary operation, such as a semigroup or a group. A structure A with a binary operation is right-orderable if there is a linear ordering of the domain of A, which is right-invariant with respect to the operation. If the ordering is also left-invariant with respect to the operation, then the structure A is bi-orderable. Interesting examples of structures with a nonassociative operation, which are right-orderable, come from knot theory and are called quandles.

There is a natural topology on the set of all orders of a structure with a binary operation. This space is compact, and is metrizable if the structure is countable. For an orderable group, there is an interesting connection between compactness of its space of orders and the classical theorem of Conrad and Łoś. For some well-known groups, the space of orders is homeomorphic to the Cantor set. Downey and Kurtz showed that a computable orderable group does not necessarily have a computable order. For some familiar computable orderable groups we investigate degree-theoretic complexity of their orders.

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[3] J. Chubb, M. Dabkowski and V. Harizanov, *Groups with orderings of arbitrary algorithmic complexity*, in preparation.

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