1080-06-316 **Valentina Harizanov*** (harizanv@gwu.edu), Department of Mathematics, Washington, DC 20052. *Different approaches to orders on groups.*

A group is left-orderable if there is a linear ordering of its domain, which is left-invariant with respect to the group operation. If the ordering is also right-invariant with respect to the operation, then the group is bi-orderable. Orderable groups have been studied since Dedekind, Hőlder and Hilbert, and are of great importance in algebra. In the last decade, the theory of orders on groups has become an important tool in low-dimensional topology, in particular, in understanding the geometric properties of 3-dimensional manifolds. Orders on countable groups have also been studied in computability theory, both for abelian and non-abelian groups. Left-orderable groups have been recently studied by using dynamical methods. There is a natural topology on the set of all left orders, as well as bi-orders, on a particular structure, and these spaces are compact even when the structure is only a magma. We will investigate how algebraic, topological, and computability theoretic properties of the spaces of orders interact. (Received January 31, 2012)