

- ELÍAS BARO, *Homotopy types of definable groups in o-minimal structures*.
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Many aspects of o-minimal topology have been studied in the last years. This development has found a successful approach through homology and cohomology theories. However, there has been a lack of development of o-minimal homotopy, only the fundamental homotopy group was considered. Recently, the author and Margarita Otero also provide a homotopy theory to the o-minimal setting (see [1]). Furthermore, the results in [1] can be applied to the study of definable groups in o-minimal structures. In particular, A. Berarducci, M. Mamino and M. Otero prove in [2] that the o-minimal homotopy groups of a definably compact group G are isomorphic to the homotopy groups of its associated (via Pillay's conjecture) compact Lie group G/G^{00} . The present work is a contribution in the line of [2]. Let G be a definably compact and connected group in an o-minimal expansion of an ordered field. Without loss of generality, we can assume that the underlying set of G is semialgebraic over the real algebraic numbers. We prove that the realization $G(\mathbb{R})$ of the latter in the real field is homotopy equivalent to G/G^{00} . From this it follows that two definably compact and connected groups G and H are definable homotopy equivalent if and only if G/G^{00} and H/H^{00} are homotopy equivalent. We make use of a recent structural result by E. Hrushovski, Y. Peterzil and A. Pillay in [3] concerning definably compact groups.

[1] ELIAS BARO, MARGARITA OTERO, *On o-minimal homotopy groups*, *The Quarterly Journal of Mathematics*, (2009), in press (doi:10.1093/qmath/hap11).

[2] ALESSANDRO BERARDUCCI, MARCELLO MAMINO, MARGARITA OTERO, *Higher homotopy of groups definable in o-minimal structures*, *The Israel Journal of Mathematics*, (2009), in press.

[3] EHUD HRUSHOVSKI, YA'ACOV PETERZIL, ANAND PILLAY, *On central extensions and definably compact groups in o-minimal structures*, *e-print*, arXiv:0811.0089, (2009).