DEFINABLE GROUPS

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SUMMARY: Let $\mathcal{R} = \langle R, <, +, \cdot, \cdots \rangle$ be an o-minimal expansion of a real closed field. We are going to consider groups definable in $\mathcal{R}$. The talks will be focus on algebraic aspect of definable groups. We will consider the following topics:

- Euler characteristic and torsion elements.
- Torsion-free subgroups.
- The Lie algebra of a definable group.
- Compact-torsion-free decomposition.
- Semisimple and solvable definable groups.

The following sections are a good introduction to the topics to be treated in the tutorial.

- Sections 2, 3, 5 and 6 of [2].
- Sections 2, 5 and 6 of [1].
- Subsections 1.1 and 1.2, and section 2 of [3].

References

[1] Alessandro Berarducci. Zero-groups and maximal tori. In *Logic Colloquium 2004*, volume 29 of *Lect. Notes Log.*, pages 33–46. Assoc. Symbol. Logic, Chicago, IL, 2008.

[2] Margarita Otero. A survey on groups definable in o-minimal structures. In *Model theory with applications to algebra and analysis. Vol. 2*, volume 350 of *London Math. Soc. Lecture Note Ser.*, pages 177–206. Cambridge Univ. Press, Cambridge, 2008.

[3] Ya'acov Peterzil, Anand Pillay, and Sergei Starchenko. Definably simple groups in o-minimal structures. *Trans. Amer. Math. Soc.*, 352(10):4397–4419, 2000.