

RECENT DEVELOPMENTS IN SEMIALGEBRAIC TRANSFORMATION GROUPS

DONG YOUP SUH

ABSTRACT. Semialgebraic set in \mathbb{R}^n is a subset defined by finitely many polynomial equations and inequalities. Semialgebraic group action on semialgebraic set can be defined obviously. Semialgebraic category lies between topological and algebraic categories, and used to understand the geometric structures of algebraic varieties. However since semialgebraic category is less rigid than algebraic one, one can expect that it shares some properties with topological categories. Indeed, many of the fundamental theorems in topological transformation group theory are proved to be valid in semialgebraic category, which one can not expect in algebraic transformation groups. In this lecture we will discuss some of such results. Using these results we are able to give a partial solution to Bredon's mapping cylinder conjecture which roughly claims that if the orbit space M/G is a mapping cylinder then so is the G -space M for a compact Lie group G .

Most part of the lecture will be about compact group actions, however if time permits we might discuss briefly about proper actions of noncompact groups.

DEPARTMENT OF MATHEMATICS, KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY