Hjorth Analysis of General Polish Group Actions

Abstract

Hjorth has introduced a Scott analysis for general Polish group actions, and has asked whether his notion of rank satisfies a boundedness principle similar to the one of Scott rank - namely, the orbit equivalence relation is Borel if and only if Hjorth ranks are bounded.

We will present the principles of Hjorth analysis and Hjorth rank, and answer Hjorth's question positively. From that we will get a positive answer to a conjecture due to Hjorth - for every limit ordinal α, the set of elements whose orbit is of complexity less than α is a Borel set.